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Prehistoric cultural resources of the Whitetail Pipestone area, Jefferson County Montana| An overview and implications for cultural resource managers

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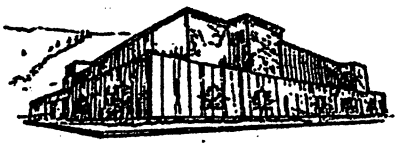

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PREHISTORIC CULTURAL RESOURCES OF THE WHITETAIL PIPESTONE AREA JEFFERSON COUNTY, MONTANA

AN OVERVIEW AND IMPLICATIONS FOR CULTURAL RESOURCE MANAGERS

by Sandra L. Morris

Professional Paper prepared in partial fulfillment
of the Master of Arts Degree in Anthropology
Cultural Resource Management
The University of Montana

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"Prehistoric Cultural Resources of the Whitetail Pipestone Area, Jefferson County, Montana: An Overview and Implications for Cultural Resource Managers."

Chairman: Thomas A. Foor

For over ten thousand years, hunters and gatherers subtly shaped the cultural landscape in the mountainous country of Whitetail Pipestone in southwestern Montana. During the past two centuries, through settlement, industrialization and other uses, modern Americans have nearly obliterated traces of the earlier cultures. Today, public land managers are faced with balancing the continued heavy use and preservation of the area's resources, including the fragile remnants of the prehistoric human past.

This study focuses on identifying those cultural remains which make up the human prehistory in the Whitetail Pipestone. Through review of prior inventories, conducting new inventory, recording cultural sites and placing the sites within the larger context of regional prehistory, I seek to determine what types of human behavior and land use patterns are discernible across this landscape. Once sites are identified, an attempt is made to determine the relative preservation of the site and to offer land managers a perspective of the resource.

In using an "overview" approach, this document provides a compilation of all known scientific and cultural resource data on the human prehistory of the study area. From this overview comes a better understanding of the aspects of this landscape which are worthy of preservation.

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ACKNOWLEDGMENTS

It took me a year and three months to bring this project to fruition; along the way I stated deadlines and made promises that I couldn't keep. First, I want to offer my apologies to those of you who were on the receiving end. Thank you very much for your patience and your and your willingness to work with me. I offer my sincere appreciation to my graduate committee, Drs. Tom Foor, Bill Prentiss, and Jack Donahue. Thanks also to Dr. Campbell, who filled in at the last minute for the final defense. The University as a whole has been very accommodating of my 'non traditional' situation.

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My family and friends provided encouragement and understanding as I met milestone after milestone. We celebrated the small successes and the big ones. Your support is greatly appreciated; I couldn't have done it without all of you. Special gratitude to my partner Curt for praising each accomplishment and for patience with all the 'time out' for school and project work. A thanks to my sister, Laura and to my friend Seth Diamond, who provided the initial inspiration in my choice to embark upon an academic journey. I dedicate this project to the memory of Seth. I know he would have cheered to see the outcome.

PART I: SCOPE OF WORK

Area and Analysis Parameters

1.1 Background

The 'Whitetail Pipestone' (WP) is a name coined by managers and public land users to describe the mountainous country near the Continental Divide between Butte and Whitehall, Montana. Changing and increased motorized use in the Whitetail Pipestone, both on an off of federal "system" roads and trails reflects lack of a detailed recreation plan and has resulted in user conflicts. Federal land managers from the Beaverhead-Deerlodge National Forest and the Headwaters Resource area of the Bureau of Land Management recognize the need for a formal 'recreation and travel management plan' for the Whitetail Pipestone area. The Forest Service's participation in this cooperative effort also constitutes part of an ongoing compliance process to meet requirements in the Forest Plan. This timely off-road-vehicle and recreation use assessment coincides with a region-wide analysis of similar issues. To finalize a management plan, federal law requires the agencies to complete an environmental analysis.

Heritage Program personnel began the background research to compile existing cultural resource information for this analysis almost two years ago. As a result, they found a higher-than-expected density of both historic and prehistoric sites. The Whitetail Pipestone has a diverse and interesting past. It is part of a larger area in southwestern Montana where human use may have begun at least 12,000 years ago. Different cultural groups are believed to have occupied the area throughout prehistory. Lewis and Clark, at the dawn of historical times, travelled through the nearby Jefferson Valley, expecting to find Sacajawea's people camped nearby; other 'whites' soon followed. By the end of the 19th Century, the adjacent city of Butte was the hub of Euro-American settlement, industrialization and influence in Montana.

Archaeologists who conducted field inspection in the Whitetail Pipestone found that many cultural sites overlap with the existing and well-used road and trail system; new "user created" trails also cross archaeological sites. This information, along with resource concerns regarding soils, wetlands, and wildlife triggered elevation of the planning analysis, from an Environmental Assessment (EA), to an Environmental Impact Statement (EIS). The process continued into the new millennium. A multi-resource, multi-agency analysis of this magnitude can be lengthy; as an interim protection measure, the Beaverhead-Deerlodge National Forest (BDNF) and the Bureau of Land Management (BLM) Headwaters Resource Area issued an "emergency closure" to off-road motorized use in much of the Whitetail Pipestone.

The following material in Chapter 1 is provided as a means of introducing the heritage resource project and suppling background information for the reader. The delineation of project parameters essentially provides the "the scope of work."

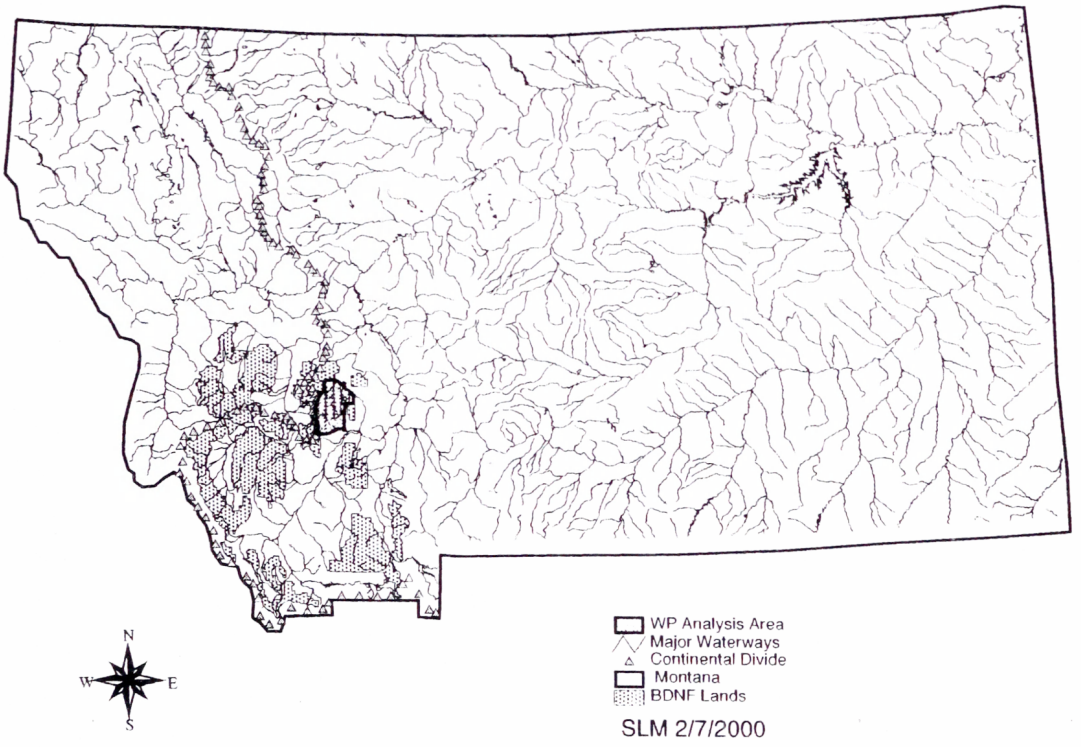


Figure 1. Map of the study area in relation to the Beaverhead-Deerlodge National Forest boundaries and to Montana

1.2 Geographic and Land Management Boundaries

The "Whitetail Pipestone" (WP) is a 275,000 acre geographic area delineated by federal land management agencies for environmental analysis. It is located between the communities of Butte, Basin, Boulder and Whitehall, in southwestern Montana. This relatively dry, mountainous country was formed by uplift from the Boulder Batholith at the headwaters of the Missouri drainage. Small creeks originate from between high, rounded and boulder-covered, granite ridges that generally trend north and south. The management area is bounded on the west by the Continental Divide above the city of Butte, the high mountain meadow of Elk Park, and the steep, north-flowing drainage of Bison Creek. To the north, and northeast the unit is surrounded by the Boulder River

valley and the communities of Basin and Boulder; to the east, the boundary follows the broad, open valley of Lower Whitetail Creek to the community of Whitehall. Between Whitehall and Pipestone Pass the unit boundary follows State Highway 2, also known as the "old highway" or "Harding Way" along Little Pipestone Creek. The towering and often snowy and untimbered peaks of the Highland Mountains lie immediately south. Across the broad Jefferson River valley the jagged Tobacco Root Mountains form the southeastern skyline.

The analysis area includes land managed primarily by the Beaverhead-Deerlodge National Forest on the Butte and Jefferson Ranger Districts. Forest Service land encompasses about 231,000 acres or 84% of the management unit. BLM lands border the lower elevations of the National Forest to the northeast, east and southeast. State and private lands also lie within the Whitetail Pipestone analysis area. Private lands form the fringes on the west, northeast and east-southeast. State sections are interspersed with BLM and private ownership on the east side.

1.3 Cultural Phenomena and Impacts Considered

This document is written primarily to provide an overview of prehistoric cultural use and its remaining evidence on the landscape. While it is necessary to touch on the values of contemporary tribal use and historic Euro-American influence in the area, these topics are not considered in detail. A discussion of cultural resource information for all land jurisdiction within the analysis area, and that of adjacent prehistoric sites provides the background and necessary context. A limited "site type" analysis supplements the interpretation of archaeology sites. After building this initial context, the overview is tiered specifically to focus on *prehistoric* sites found on Beaverhead-Deerlodge National Forest lands.

Current information regarding the *cultural prehistory* in southwest Montana indicates that native peoples have been present in the analysis area for at least 11,500 years (Davis 1993:iii). Major river corridors and the Rocky Mountains of southwestern Montana were a crossroads for Plains, Plateau and Great Basin Indian tribes (Beck 1989:29, Knight 1989:151). Evidence suggests that prehistoric inhabitants practiced 'seasonal rounds' or patterned migration as part of their hunting and gathering subsistence activities in this type of environment. Known prehistoric sites in the Whitetail Pipestone range from hunting and lithic procurement sites to tool manufacturing areas and campsites. Also included are red ochre pictographs (often viewed as sacred sites), simple rock-shelters and possibly plant gathering areas.

As part of the review, Heritage Program managers seek to determine whether the location of identified cultural sites and cultural concentration areas is a product of actual prehistoric patterns of use, or a product of exposure (and identification) through disturbance by historic or modern use. The soils in the area consist primarily of decomposed granite; this coarse, skeletal soil often compounds the issue of site preservation, because of its instability and high erosion potential. This is of special concern to archaeologists, since many sites are found in disturbed areas that can easily become gullied with one heavy rainfall.

Motorized vehicle travel and recreation use is of primary consideration in the agencies' environmental analysis. Road construction, maintenance and use can result in impacts where these activities overlap with prehistoric sites; for this reason, the relationship of roads and trails to prehistoric cultural resources is particularly noteworthy. All potential impacts will be considered when reviewing the condition of cultural resources for the analysis. Heritage professionals seek to determine what types of activities may be significantly impacting sites, why impacts are occurring, and how they might be avoided in the future or mitigated through pro-active management.

1.4 Legal and Policy Framework

Congress first recognized the protection of archaeological resources in 1906 with the passage of the Antiquities Act. For nearly a century government agencies have been mandated certain historic preservation responsibilities for public lands under subsequent laws and executive orders. Statutory authorities including the National Historic Preservation Act of 1966 (NHPA) as amended (1992), the Archaeological and Historic Preservation Act of 1974 (AHPA), the Archaeological Resources Protection Act (ARPA) of 1979 and the Federal Land Management Policy Act (FLPMA) of 1979 name a few. NHPA and related legislation charge federal agencies with the cultural resource management (CRM) responsibility and drive a large portion of the archaeological field work currently being performed in the United States (Foor 1994:2, Raschkow 1998:1)

Cultural resource managers use specific and standard definitions and criterion for addressing the legal process under NHPA. A historic property is defined as "any prehistoric or historic district, site, building, or object," usually greater than 50 years old, which is/are eligible for inclusion, or included on the "National Register of Historic Places" [36 CFR 60.4]. NHPA Section 110 requires government agencies to inventory, evaluate and where appropriate "nominate to the National Register" those properties which meet National Register criteria. Section 106 of the Act requires the agency to take into account a project's effect on historic properties, and afford the appropriate State or Federal agency

an opportunity to comment. Recent and updated regulations for implementing Section 106 under the 1992 Amendments to NPHA (Federal Register 27045, 1999) add further responsibilities as to the appropriate involvement of the public and Indian Tribes.

National Forest land managers, nationwide are under the mandate to implement "ecosystem management" (Thomas 1994). Then Chief of the Forest Service, Thomas described ecosystem management (EM) as a "holistic approach to natural resource management...that steps back...and focuses on the forest landscape and its position in the larger environment in order to integrate the human, biological and physical dimensions of natural resource management."

During the past six years the Forest Service has taken seriously it's mission toward Ecosystem Management. Traditionally, in natural resource agencies the term "ecosystem" was thought of as a "natural place" to the exclusion of cultural modifications or humans. Accepting and incorporating human, social and cultural aspects into ecosystem management were new challenges to many resource managers. Heritage Program specialists, however, were positioned to integrate much of what they already knew about past human lifeways into today's environmental analyses. An example is the now widely accepted idea that manipulation of vegetation by burning was characteristic of many past cultures. In considering the human dimension of Ecosystem Management managers came to realize that the landscape which the first Euro-Americans saw was not at all "pristine," but the product of a culturally modified environment (Morris 1992). In the following overview, the emphasis on environmental attributes and related archaeological research methods is aimed at gaining better understanding man's function as part of the ecosystem. Answers to potential research questions reflect the opportunities and challenges of archaeology and that of a land management agency interested in the past variation and function of ecosystems.

Management direction for the Deerlodge National Forest (now consolidated with the Beaverhead National Forest) is found in the *Forest Plan* (FP) dated September 1987. The Plan provides forest-wide goals and objectives (FP:II/1-11), Standards and Guidelines (FP:II/12-32), and direction for each of the forest subunits or management areas (MAs) (FP:III/1-75). Under the current Plan the Whitetail Pipestone falls into a management area known as A-1. A-1 imposes no restrictions for off-road motorized use. Goals in the Plan that relate to the analysis area include providing for adequate areas of quality motorized and non-motorized recreation and providing a variety of recreation experiences. Objectives which apply directly to the analysis area include maintaining the current overall capacity of recreation (e.g. camping, picnicking and other "developed site"

opportunities), an emphasis on both motorized and non-motorized dispersed recreation opportunities (during all seasons), and providing for "about 29% of the Forest to be managed for primitive or semi-primitive recreation." The Forest Plan includes direction on recreation management for hunting, the use of roads, trails and lakes, and development of multi-media education and information programs (WP EIS:Chp III-1-2). A major part of the Forest Service role in the current analysis is the need to bring the management unit into compliance with the Forest Plan. The BLM is a partner in the environmental analysis, but has somewhat different guidelines and directives. The reader is referred to the WP EIS (1998) or the BLM for additional specifics.

Federal Agencies are also charged with the "trust responsibility" of maintaining reserved treaty rights and including theTribes in management decisions which may affect them. Indians included in the Flathead Treaty of 1855 (Salish, Kutenai, Flathead) reserve rights for hunting, fishing, gathering, and grazing on some west-side lands of the Beaverhead-Deerlodge National Forest. On the western edge of the Whitetail Pipestone management unit, these treaty activities can be carried out at "usual and accustomed" places on "open and unclaimed" (public) lands (Kappler 1971; Indian Claims Commission 1978). The "trust" responsibility for managing areas where reserved rights are included poses an additional level of consideration for public land managers.

1.5 Theoretical Framework

The Secretaries Standards for Archaeological Research (ACHP 1995) directs that "theoretical and methodological issues pertinent to the research topics...be addressed" when designing an archaeological data recovery or research project. The aim of the current work is to address agency-oriented CRM requirements in conjunction with professional archaeological research to produce a work which is beneficial to both. To accomplish this, I find the theoretical backdrop of Cultural Ecology or Archaeological Systems Theory as the most appropriate perspective regarding the "ecosystems management" philosophy on today's public lands. Many mutual benefits can result from cooperative efforts in natural and heritage resource studies in this realm. This perspective provides the avenue for the greatest integration of efforts.

Cultural Ecology is a viewpoint derived from a collective body of anthropological concepts and theories. This idea, first christened "cultural ecology" by Jilian Steward (Refrew and Bahn 1991:486) highlights the ways in which adaptation to the environment can cause cultural change; it recognizes the contingent and dynamic relationship of human behavior to the natural environment. Emphasizing the importance of material requirements to human populations, the cultural ecology theory sees culture as the primary

adaptive mechanism in this relationship. It is concerned with adaptation at two levels: first with regard to the way cultural systems adapt to their total environment, and second, as a consequence of the systemic adaptation, with regard to the way the institutions of a given culture adapt or adjust to one another (Kaplan and Manners 1972:75, Ruebelmann 1983).

Considered to be one of the "major theoretical orientations of anthropology" (Kaplan and Manners 1972:35), cultural ecology contains two central concepts: the *environment* and *adaptation* (p. 77). Not to be confused with "environmental determinism," the cultural ecology theory sees the features of the natural habitat not in a determining role, but rather in a permitting or limiting role, offering certain opportunities based on resource availability. These opportunities can never be stated in absolute terms, but are always relative to the cultural means available for exploiting them (Kaplan and Manners 1972:78); this approach is particularly concerned with economy, social organization, and interactions with the environment (Heritage Resources: Tools for Ecosystem Management 1992). Through this "filter" archaeologists study how human adaptation to the physical environment is effected by cultural mechanisms and whether differences among cultures can be significantly explained by the influence of different environments.

1.6 CRM: Pulling It All Together

Cultural Resource Management (CRM) in the Whitetail Pipestone area is on the leading edge of a contemporary Federal recreation management debate (Enright 1999, USDI and USDA 1999). New motorized recreation methods pose a greater threat to the non-renewable resource. Under the regulations implementing the National Forest Management Act, many Forests are in the process of reviewing and renewing their ten-year Forest Plans. These issues are just a preview of those facing land managers in the coming decade. Agency archaeologists are confronted with related inventory and impact questions and management recommendations on a regular basis. The Whitetail-Pipestone analysis is of particular interest because of the implications it holds regarding prehistoric sites and travel management planning. The type and kind of prehistoric sites, uniqueness of geology, and extensive overlying historic use present in the Whitetail-Pipestone challenges the application of cultural resource management.

The audiences for any cultural resource management work are varied and diverse. It is the responsibility of the agency specialist to convey information and recommendations to the line officers who will be making resource decisions as well as to project managers, compliance reviewers, peers, program employees, even Tribes, members of the public and academicians. Teamwork with project managers and other resource

specialists is essential to gain an accurate understanding of a given proposal and to develop a strategy for inventory. At the same time appropriate information, data gathering techniques and field methods, often must be relayed to seasonal employees and technicians. Concurrently the Cultural Resource Manager must compile and present this information to the State Historic Preservation Officer to comply with National Historic Preservation Act (NHPA) Section 106 review procedures. These audiences alone present a wide range of understanding and levels of education and interest regarding the archaeological resource. At times the Heritage Program manager is addressing each of these audiences in a single document, as in the case of a an Environmental Analysis or Impact Statement, Cultural Resource Overview or Heritage Preservation Plan.

1.7 Goals and Objectives

For the reasons outlined above, the goals of this document are many and diverse. Echoing the sentiments of colleagues on the Bitterroot and Lolo National Forests (McLeod and Melton 1986:I-1), I also believe that it may impossible to achieve each goal or objective equally. In the following section, I list my primary aims and objectives. Above all, I maintain the hope that this study document is flexible enough to be of use in future research and comprehensive enough to provide a basis to build upon. Scientific technology, government policy, and cultural resource management have changed dramatically and rapidly during the past 20-25 years. Influences continue to grow in complexity and technology moves forward at an ever-increasing pace. Just as this study is finalized, we have begun implementing the new regulations at 36CFR 800 for the 1992 amendments to the National Historic Preservation Act. Concurrently also, the Forest Service and Bureau of Land Management (BLM) have joined forces in a region-wide, three-State Environmental Impact Statement (EIS) which addresses increased off-highway-vehicle (OHV) use on 26.7 million acres of public lands (USDI and USDA 1999).

The long-term goal of my work is to provide a *Heritage Preservation Plan* (HPP) for the prehistoric resources in the Whitetail Pipestone area, with particular regard to recreational uses. Originally, the HPP was the focus of my project. However, to be most effective, an HPP must factor in the agency's decision on recreation and travel management. To reach that decision an overview or 'characterization of the resource' is necessary; it provides managers with an understanding of the nature and distribution of the cultural sites and the impacts which threaten them. This knowledge will lead to better site conservation and stewardship, and to more informed land management decisions. Ultimately, it will lead to a better Heritage Preservation (and Management) Plan.

The Heritage Preservation Plan is accepted as an effective CRM tool, appropriate for treating a class of cultural sites or phenomena which occur over a large geographic area. During the fall of 1998, this message was presented to agency archaeologists by the Montana State Historic Preservation Officer (SHPO) at a fall meeting of Forest Service Heritage Program personnel (Putz personal communication 1998). Paul Putz offered his views on the development of such a plan, acknowledging that there "is no standard HPP," and listing a number of basic points which he felt were important to any plan. SHPO felt that the plan should be "guided by National Register Bulletin 16B" and other Technical Bulletins. It should first contain an overview of the geographic area, list the goal of preparation and identify the class or classes of properties considered. His idea of the HPP was "heavy on contextual information...providing a comprehensive overview of identified resources." He saw the HPP as documenting the CRM progression from "data to decision," with the final product ideally implemented as part of a legally binding instrument, such as a Programmatic Agreement. SHPO cited the *Deerlodge National Forest Historic Preservation and Management Plan for Mining and Related Properties* (Periman 1994) as a good example.

For the purposes of the Whitetail Pipestone analysis and that of my concurrent professional graduate paper, I divided the HPP into logical and manageable segments or phases, which as a whole will "record the CRM progression...from data to decision." Phase I outlines the project parameters and scope of work, then provides a comprehensive overview of the management area and its cultural and associated natural resources. This phase, the Overview, defines the "existing condition" of the archaeological resource. Phase II is logically the outgrowth of the overview; it further considers identified resources, site types, site condition and other data to identify specific avenues of research and priorities for significance. Phase II outlines the standard archaeological methods and procedures for use toward this end. Phase III is seen as a set of recommended management actions to be used in stewardship of the resource. This phase would typically include the review and refinement of the HPP with peers, academic interests, partners in the Cultural Resource Management arena, the Montana SHPO and the Advisory Council on Historic Preservation (ACHP). Ultimately at the end of Phase III, the final HPP would be implemented by a signed Programmatic Agreement between the Agency, SHPO and the ACHP.

In this manner, each Phase of the HPP produces a 'stand alone' document, which is tiered from preceding work. This strategy allows the flexibility for addition of new or

evolving information, while providing a foundation and baseline information for technical staff and managers.

To accomplish Phase I, I prepared the cultural resource overview as my professional project at the University of Montana. The overview document contains a brief environmental review as well. Since hunter-gatherer peoples are part of the ecosystem they exploit for subsistence, knowledge of one without the other provides an incomplete picture. I seek to identify significant interactions between the two and to highlight 'change through time.' After the discussing each resource, I pose possible avenues of archaeological research or heritage management that might prove productive. By gaining an understanding of the dynamic cultural-ecological relationship, archaeologists can provide explanations of residual phenomena, and evaluate the "significance" of sites and features which remain on the landscape.

Since the Whitetail Pipestone analysis area is based on political and land ownership boundaries, rather than environmental or cultural areas, it does not reflect the true nature of prehistoric use. Therefore, it is necessary to draw upon regional cultural history to provide a more holistic and accurate context for understanding and evaluating the resource.

Prior and ongoing cultural inventory has identified specific resources and sites within the study area. Communication and interpretation of the data inherent in cultural sites "to other professionals, as well as lay people, is a key element in the full realization of the value of these sites" (Keyser, Burge and Fleming 1988:12). In the overview, I discuss the methodological and historical basis for how resources were identified, and then compile all information to discuss the distribution and nature of known and expected cultural resources. By highlighting and illustrating certain examples, I aim to provide land managers and cultural resource managers with an understanding of the resource as we know it today.

My interest in the particular project stems from a passion for archaeology and my concern for preservation of the sites. First hand experience has shown me the vulnerability of the prehistoric resources in this fragile and well-used environment. With this research I hope to integrate CRM and the science of archaeology to the greatest extent possible and provide clear and defensible arguments for the preservation of significant sites.

1.8 Materials and Methods

Materials to be used in the "overview" include prior CRM documentation for the local area, the region, and intermontane and high altitude adaptations, as well as

examples of other management plans. Cultural resource contractors (Greiser 1984, Deaver and Deaver 1986, Hufstetler et. al. 1992), academicians (Davis 1993, Foor 1994, Frison 1991) and state and federal agency personnel (Dill and Cornish 1997, Knight 1989, McLeod and Melton 1986, Taylor 1984, Ruebelmann 1983) all provide views and data to draw from. Regional authorities and researchers who have work specific to the Continental Divide and the east slopes and Rocky Mountain region of southwestern Montana (Baumler and Schwab 1993, Baumler et. al 1996, Greiser 1984 and 1986, Davis 1993, Deaver and Deaver 1986, Knight 1989) will be especially helpful. Deerlodge National Forest overviews and site identification/inventory strategies (Knight 1989, Beck 1989, Periman 1994, SIS 1995), as well as a larger southwest Montana prehistoric overview and management plan by Foor (1994) promise to be very pertinent. The application of prehistoric contextual documentation in National Register Bulletin 16B format by Renewable Technologies Inc. for a Montana county provides an important formatting example (Hufstetler et. al. 1992). Project compliance surveys and inventories by Agency personnel furnish the majority of prior field coverage and site records for the analysis area. Results of the 1998 Beaverhead Deerlodge National Forest Passport in Time Project in the Whitetail, current and ongoing NHPA Section 106 surveys, and additional reconnaissance promise new, primary inventory data.

Cultural Resource Management and the science of archaeology are often at philosophical odds regarding archaeological excavation or the salvage of information from non-sanctioned sources, including collectors (Woodall 1990:80). The current project provides an example. At least one site in the Whitetail-Pipestone was excavated in the 1970's by avocational archaeologists and collectors. Information from the excavation has received some scientific exposure, but to date, has only minimally entered the professional record. In the prehistoric overview, materials from early collection will be assessed and added to the record; it is my position that loss or omission of this information is more unfavorable than the criticism which may result from working with materials not professionally provenienced.

Methods for gathering data include a review of Forest Service, Bureau of Land Management and State files for the project area, plus personal site visits and survey to verify or update source material and concurrently gather new data. The overview will synthesize information obtained by all methods. Concurrent and ongoing BLM work in adjacent areas will be included where possible. Preliminary review found over 200 cultural properties (both historic and prehistoric) documented for the study area. Records are in varying stages of completion and sophistication; the status often depends on when

and why the site was recorded. Most prehistoric sites have not undergone eligibility assessment for the National Register of Historic Places (NRHP).

Methods for analyzing data include compilation of information for all known or recorded prehistoric sites (and possibly isolates) in the analysis area. I will glean information and inferences on temporal, functional association and degree of site preservation from existing and new site records. Because my research is driven by the threat of impacts from motorized recreation use, I will also note the location of the site proximate to a road, trail or other modern or historic development. A correlation of environmental variables *may* also be attempted. Categories of information may be added or consolidated as the data indicate.

I plan to use temporal indicators as identified by Greiser (1984), Frison (1991) and Herbort (1987) for making inferences on sites containing projectile points. Site typology as indicated by Knight (1989:Table 8-2 and p. 101-102), Taylor (1984:Appendix A p. 1-19) and Ruebelmann (1983) will guide site type and functional inferences. I plan to conduct artifact morphology analysis on all accessible materials and will include my illustrations as appropriate in the text. A few sites have undergone obsidian source analysis, obsidian hydration dating and/or faunal or macro/micro botanical studies. Others contain identifiable functional tools and features. Where any of this information is available, it will be included in the overview.

In preparation for the work, cultural resources were plotted on 1:24,000 scale topographic maps and digitized into the Forest Geographic Information System (GIS). With this information in electronic format, it is possible to add new information and utilize other Forest resource layers to see correlations regarding environmental variables. While this exercise is by no means true "predictive modeling," it can pave the way for scientifically-based inferences or estimations of where sites might be found in the remainder of the uninventoried area.

In preparing the prehistoric overview and also in my vision for a subsequent Research Design and recommendations for an HPP, I hope to pursue the most logical and efficient avenue toward with the scientific research, to compile the data into understandable and professionally sound and defensible format, and to provide solid recommendations for the management and protection of significant cultural values in the Whitetail Pipestone.

PART II: THE ENVIRONMENT

SIGNIFICANT RESOURCES AND RESEARCH OPPORTUNITIES

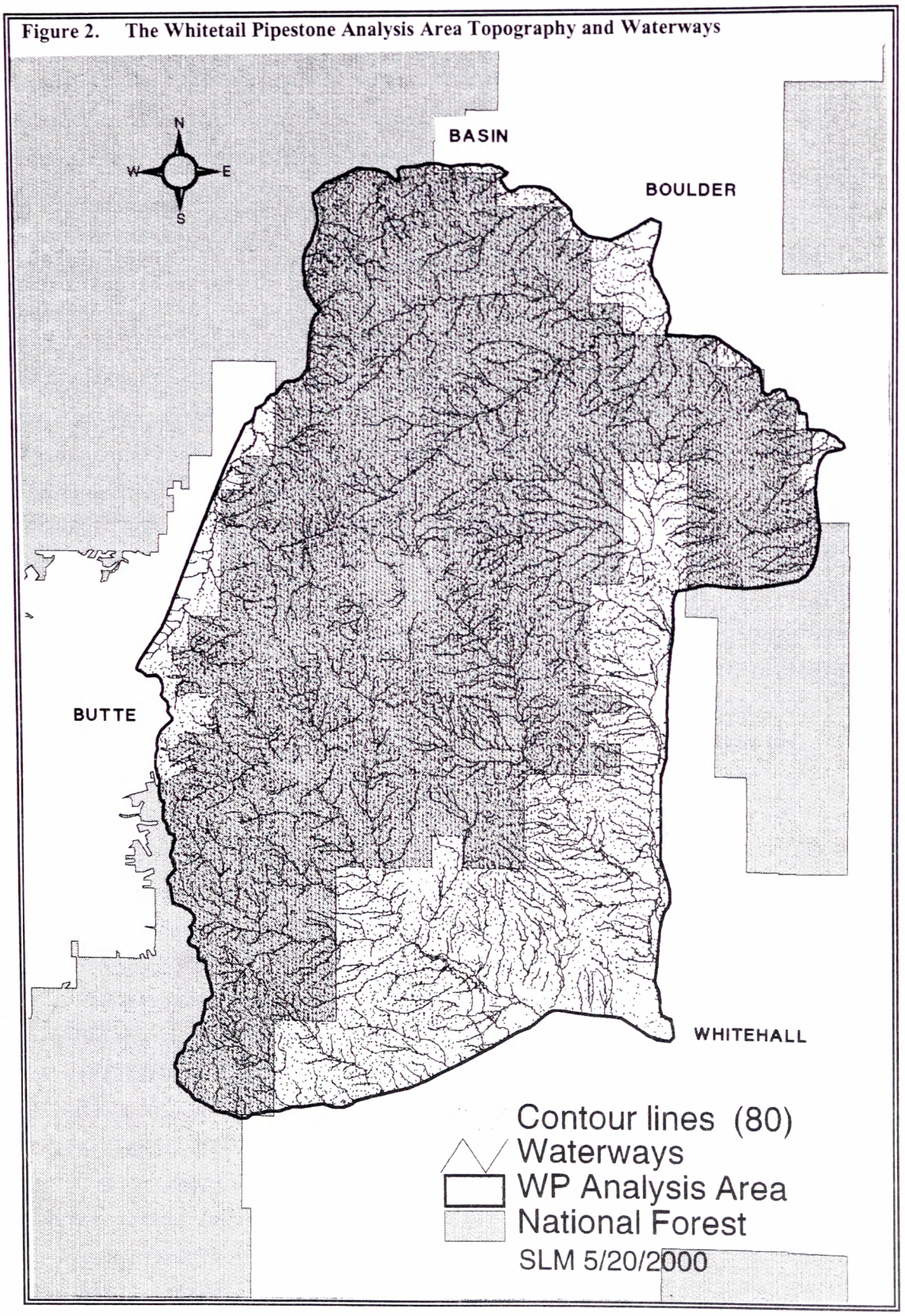
Aboriginal peoples develop a relationship with the natural environment to fulfill subsistence, shelter and spiritual needs. In order to understand human culture and adaptation, it is also essential to gain an understanding of the environment in which they lived. Together, the human dimension interacts with the physical and biological environments to define a "lifeway." The study area has many, if not all of the attributes and resources necessary for hunter and gatherers to live off the land. Water, wildlife, and plants provide sustenance and shelter; lithic sources provide stone for tool manufacture. Archaeological remains within the study area provide an understanding of these prehistoric lifeways.

2.1 The Physical Environment: Topography, Geology and Waterways

Topography and Landform in the Whitetail Pipestone research area is illustrated in the high-relief, granitic mountains and foothills straddling the Continental Divide between Butte and Whitehall, Montana. Three mountain passes provide access from the headwaters of the Clark Fork (of the Columbia) to the headwaters of the Missouri River. Elk Park, Homestake and Pipestone Passes are well-known routes, both historically and prehistorically; they cross the divide at elevations of 6368', 6375' and 6453' respectively. East Ridge and Rampart Ridge, local names for the towering boulder-fields which form the "divide" near Butte, provide ample illustration of their namesake. High mountain meadows, such as Elk Park, Upper and Lower Whitetail Parks, Halfway and others provide headwaters catchment basins for seasonal snowmelt and soil buildup. Small creeks originate in these basins and in upland springs and seeps; these often-ephemeral water courses are quickly joined by others to form Pipestone, Bison and Whitetail Creeks, the Little Boulder River and many others. Bounded on the west by the meandering spine of the Continental Divide, the Whitetail Pipestone slowly tapers eastward toward Little Whitetail Creek and the Jefferson Valley. Alluvial terraces and floodplains flank Whitetail and Pipestone Creeks on the far eastern edge of the management unit (WP EIS 1998:III). To the north and northwest the topography drops rather abruptly into the Bison Creek and Boulder River drainages.

The Granite Geology of the Boulder Batholith is largely responsible for the rough terrain and well-drained soils in the Whitetail Pipestone area. The batholith, a large igneous intrusion which forms the backbone of the Rockies between Marysville and Butte, Montana shows "little sign of ice age glaciation" (Alt and Hyndman 1986:141).

Figure 2. The Whitetail Pipestone Analysis Area Topography and Waterways



Referred to as the "Boulder Mountains" by geologists, after their underlying formation, this portion of the Rockies remains unnamed on most contemporary maps. George Knight, when reviewing the *Ecological and Cultural Prehistory* for the Helena and Deerlodge National Forests (1989:37) commented similarly on the term, finding it "coined by geologists" in reference to this geological and geographical phenomena. This designation is employed extensively in mining-related literature (Elliot et. al. 1992); and, for the purposes of the Whitetail Pipestone analysis, I will also use the term "Boulder Mountains."

Dating to 75 million years at Elk Park Pass (Alt and Hyndman 1986:140), the Boulder Batholith is covered by younger Tertiary and Quaternary basin fill on the west edge of the management area, in Elk Park. Tertiary-age volcanics overlap and partly cover the Batholith in the northwest portion of the analysis area; these fine-gained, brown-to-red to almost-white-colored volcanics consist mostly of rhyolite. The Boulder Batholith is met on the east by the Elkhorn Mountains, which are volcanics of the same age. The Elkhorns are made up of fine-grained gray or greenish gray andesites (WP EIS 1998:III).

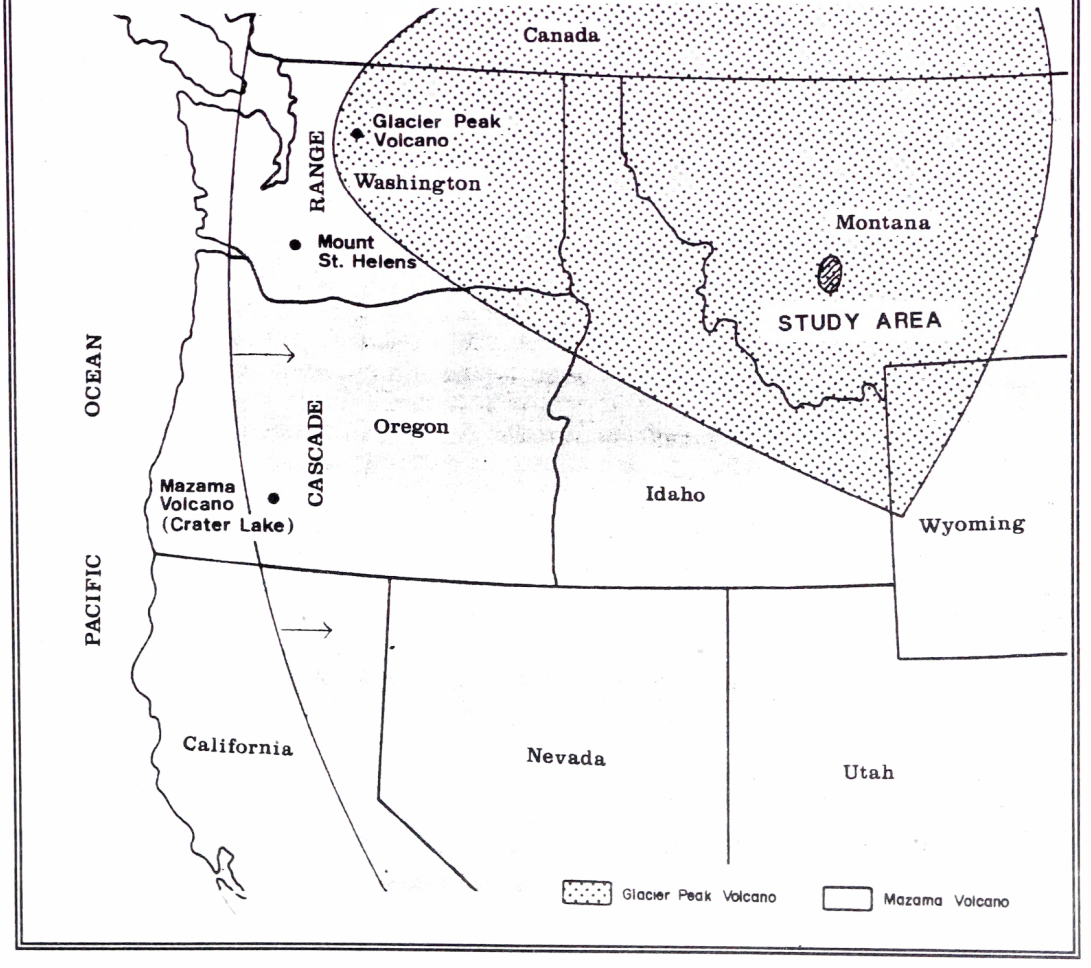
The study area's most dominant geomorphic feature, the Boulder Mountains, appear mostly rounded; peak altitudes range generally from 7000 to 7600 feet and do reach, but rarely, 8500 feet. Relief between the often-timbered mountain tops and adjacent valley bottoms only rarely exceeds 1500 feet, and is commonly less than 1000 feet. To the north of the Whitetail Pipestone, nearly all the modern stream valleys were once glaciated; the headwaters are typically evidenced by broad, swampy or boggy basins (Knight 1989:38). The approximate limit of the Boulder Mountains ice sheet during the last ice age extended to a line just north of Basin, Montana (Alt and Hyndman 1986:140). While showing less evidence of glacial formation, the headwaters basins, such as Elk Park and Upper Whitetail Park also exhibit similar broad meadow and basin features.

Soil formation and the large, rounded boulders in the research area are explained by geologists and soil scientists as the results of a granite weathering process. A close look at the granite reveals milky white or pink crystals of feldspar, shiny black crystals of hornblende and a few grains of glassy-looking quartz, often colored dark gray. Most of the mineral grains are about the size of a split pea (Alt and Hyndman 1986:141). The granitic rock weathers into weakly held debris along fractures, while continuing to be solid between them. As water penetrates the fractures, it reacts with the feldspar and hornblende and eventually turns quartz to sand (WP EIS 1998:III). This weathering forms the soil commonly known as 'decomposed granite.' When the soil is unprotected

by vegetation, erosion results, revealing the parent rock in the form of large, granite boulders. Much of the research area includes fields and slopes covered by these giant (>3m), rounded, boulders known as *tors* (Fairbridge 1968:1157-1158) and the accompanying decomposed granite soils.

The volcanic activity that formed the Boulder Batholith and the Elkhorn Mountains is very ancient and very fascinating; however, there are other, later periods of activity that are of particular interest to archaeologists. The most recent vulcanism affecting this vicinity is well researched by authors of the *Lolo-Bitterroot National Forests Prehistoric Overview* (McLeod and Melton 1986:III-9-10). These cultural resource managers illustrate that all of southwestern Montana is included in the fallout area for three well-dated volcanic episodes that occurred within the span of human habitation in North America. Archaeologists and soil scientists use ash lenses as stratigraphic markers for the cross-dating of archaeology sites. (Further discussion in 2.1.2. below).

Figure 3. Ash Fallout Over the Northwestern US. after McLeod and Melton 1986:III-9



Watersheds within the study unit form the headwaters of the Missouri River drainage at the Continental Divide. Creeks and rivers generally drain eastward, emptying into the Boulder and Jefferson Rivers, and finally combining with the Gallatin and the Madison to form the Missouri at Three Forks. In the Whitetail Pipestone, headwaters drainages include Big and Little Pipestone Creeks, Bison Creek, the Boulder and Little Boulder Rivers, Whitetail and Little Whitetail Creeks and the tributaries which contribute to these. Tributaries of notable interest to the cultural analysis are creeks by the name of Little Pipestone, Hartman, Halfway, Dry, Gillespie, Grouse, and Sage. By soils science standards, most of the area is rated as having a high or moderate runoff and accompanying erosion potential (Ruppert 1980).

2.1.1 The Physical Environment: Significance to Prehistoric Peoples

Topography and landform play a large part in the environmental context of prehistoric occupation; these factors often render an area either desirable and habitable or not, based on accompanying flora, fauna and other necessities of life. Of specific interest to prehistoric peoples, who relied heavily on stone for tools and implements, is the availability of suitable lithic material. Other features, such as stream valleys, uplifts, and erosional remnants can create "niches or microenvironments" which may support the subsistence needs of prehistoric human habitation (Frison 1991:2). Animals and plant resources, important parts of the hunter-gather economy, also have individual preferences as to topographic environment and landform.

2.1.1.1 Lithic and other Procurement Sources

Lithic Sources are plentifully supplied in the Rocky Mountains and the western Plains; materials are exposed in primary outcrops or in coarse alluvium. "Lithic materials were an important economic resource" for the prehistoric people; they were "used in tool manufacture, production of utilitarian wares and objects of ceremonial art or trade" (Frison and Mainfort 1996:41). Lithic materials are classified by formation processes and lithologic character, and fall into all three of the major geologic classifications known as 'sedimentary,' 'metamorphic' and 'igneous.' Major sedimentary lithic materials include opal, chert, chalcedony, agate and quartz and the silica-cemented orthoquartzites and porcellanites. Sandstones were often used as ground-stone implements, and native clay in ceramic manufacture. Some mineral-derived pigments, such as ochre were used for paint, ritual practices and possibly as a preservative, as far back as 11,000 years ago (Frison and Mainfort 1996:10, 16).

Metamorphic lithic materials which can be found on the margins of the Boulder Batholith include metaquartzite, steatite and other talc-like rocks, catlinite (a metamorphosed claystone), and melted clastic rocks related to burned coal seams, such as clinker and non-volcanic glass (Frison and Mainfort 1996:41). Igneous rocks employed as lithic materials include extrusives such as obsidian, ignimbrite, basalt and occasionally rhyolite. Intrusive igneous types, such as the granite of the Boulder Batholith, are less commonly used in chipped-stone tools, but sometimes functioned as ground stone implements.

Major lithic material sources which have been mined or gathered by prehistoric peoples have been recorded in southwest Montana within a hundred miles of the analysis area. These include the Schmitt chert mine near Three Forks, the California Creek Quarry near Anaconda (Davis 1982 , Davis 1988), Avon Valley and South Everson Creek Cherts (Deaver and Deaver 1986:26) and the Palmer Chert Quarry (Herbort 1990:7-15). Also worthy of note are the selection of cobbles from glacial till and alluvial material termed the "ubitiquous" quarry (Deaver 1988:1-3). The highly prized obsidian sources including Obsidian Cliff (24YE433) (Davis et. al. 1995) and Bear Gulch are centered in the Wyoming and Idaho regions just south of Montana.

In the Whitetail Pipestone analysis area there are commonly found small lithic quarries where nodules and cobbles of either basalt, chert, chalcedony or clear and smoky quartz were gathered for use in making stone tools (WP EIS 1998:III). Along stream courses and springs in the vicinity of the quarry sites, small 'chipping stations' or workshops are predictably found. Lithic sources exist in the form of clear and smoky crystal in at least two locations (24JF1584, 24JF1588) on Spire Rock Flats (Morris 1999); an ancient fine-grained basalt flow (24JF888) that is surface-exposed near Pipestone (Sanders and Kuntz 1997) provided acres of dispersed material procured by humans for lithic manufacture. Interestingly this basalt is found in well rounded and patinated cobbles, evidence of a flow with some antiquity, while other basalt at nearby Ringing rocks is coarse-grained and angular. The fine-grained flow, which varies from black to dark gray, has developed a light-colored patina and is difficult to recognize as lithic-quality material until the interior is exposed.

Steatite, Ochre and Clay are other local, geologic materials of importance. Steatite is a soft stone which was fashioned by aboriginal people into vessels, pipes and, perhaps atlatl weights (Frison 1991:116-122, 350). Clay could have been used in pottery making; ochre is the highly-sought, iron-oxide, (red) earth pigment used in paint and coverings (Frison 1991:41, 367-368). Quarries or procurement locations for steatite, ochre and clay exist in the nearby vicinity (Long 1987:30, Frison 1982b), but to date, no

sources are known to occur in the analysis area. A bright, white "food-grade calcium" is exposed at the Pipestone Mine near the southeast edge of the study area (Leetz personal communication 1997), but no aboriginal use of this source is documented.

2.1.1.2 Landforms with Cultural Association

Natural *rock shelters and small caves* are abundant in the large granite boulders which dominate the landscape; at least some of these have served prehistoric inhabitants as rock-sheltered habitation sites or as backdrops for painted rock art. Numerous panels of red-ochre-painted rock art are present in the Whitetail Pipestone. Others occur in the nearby Jefferson and Missouri River Valleys (Greer and Greer 1996, 1997). Rock shelter habitation sites are found, but they are rare, within the study area.

Bison jumps, arroyos, natural catchment basins and pounds are noteworthy as cultural landscape features on the Northwestern Plains. Aboriginal hunters preyed upon the gregarious bison. "The buffalo were grazers, but they had to go to water regularly and they liked to stand in water and roll in dirt wallows. They sought shade on hot summer days and the protection of cut banks and brush thickets during winter and spring blizzards" (Frison 1991:2). Predictably, early inhabitants could exploit the instinctive behavior of these animals and devise hunting strategies that utilized the natural landform to their advantage.

To the east of the Whitetail-Pipestone area low cliffs and arroyos (dry washes) were used as natural bison traps or jumps, a method known to have been employed by early people for the taking of big game for thousands of years. The BLM has recorded one bison kill site in the analysis area that contains evidence of great antiquity (WP EIS 1998:III). Some bison kill sites have culturally-placed stone alignments, assumed to be the drivelines which funneled the animals into the kill zone. These alignments are also documented to the north, east and south of the study area (Pallister 1992:33-59, Antonioli personal communication 2000). At other hunting sites, the natural topography was used as a 'catchment and funnel' system.

Stone alignments, cairns and circles such as noted above, are manifest as the result of a number of prehistoric uses. In addition to the alignments for "drivelines or drive lanes," piles of stones may also represent trail markers or cairns built for other reasons (Frison 1991:357-363) such as burials, prayer beds or effigies, usually presumed to have religious or ceremonial functions. On the lower creek benches, to the southeast of the analysis area, one or more "tipi circles" can often be observed; these are believed to be the stones placed to hold down the covering of tipis or similar, circular structures.

In the mountainous area of the Continental Divide, one might expect to find isolated, stone remnants of *vision questing* sites. Ethnographic literature implies the use of high and remote vantage points for such activities (Deaver 1995:39-40, Taylor 1984:Appendix A-16.). Stone structures, interpreted as vision quest sites are found in the Bull Mountains immediately east of the study area (Pallister 1992:43-47); others, to the south and west have been interpreted as 'hunting blinds' (Antinioli and Leetz personal communication 2000). To date, none have been encountered in the study area.

When comparing basic elevational landforms with prehistoric site types in the BLM Butte District management area, Deaver and Deaver (1986:76-77) found that most bison kills and stone ring sites occur at lower elevations. Alignments, cairns, ceremonial and quarry sites were more common in the high country.

2.1.1.3 Water: a Necessity of Life

Nearness to the Continental Divide renders the headwaters areas of the Whitetail Pipestone particularly noteworthy as a 'funnel-and-pass system' which might form natural travel routes from one major drainage to another. Theoretically, this system would facilitate movement of human groups along major rivers from opposite directions. This is a unique area, and it requires careful analysis to understand its potentialities and failings in providing a subsistence base and mobility patterns for past human populations (Frison 1991:4)

Water is the lifeblood of the earth, a necessity of every living being. It isn't surprising that human habitation sites are usually found near a source of perennial or at least ephemeral water. Springs and seeps, as well as creeks, streams, and rivers are known to have been the focus of cultural use in and near the study area. Large upland springs such as Robertson Spring (24CA1009), which have undergone scientific excavation have been interpreted as transient campsites and lithic manufacturing areas (Newton 1999), indicative of a patterned migration. Small springs within the study area at sites 24JF1331 and 24JF1539 show evidence of similar, prehistoric, cultural use (Morris and Leetz 1996, 1997). Hunting camps, and those sites which might be part of a seasonal round, as well as large winter encampments are commonly located near water. River drainages make natural travel corridors, since a stream usually cuts its way through the path of least resistance; early peoples, like the resources they followed and exploited, all relied on nature's pathways. Oral histories from the Flathead Tribes tell of travelling to the headwaters and then across the Divide toward the Plains for bison hunting (Beck 1989:29). Passes were an important part of the natural topography, necessary to facilitate early travel. Not only did the water ways provide for human needs and travel, but they also supplied or

supported many important plant and animal resources not available in abundance elsewhere. Remnants of small camps, believed to be seasonal hunting and processing sites are located in water-based settings in the Whitetail Pipestone. Deaver and Deaver (1986:76-77) in reviewing general environmental attributes and the occurrence of prehistoric sites in the Butte District BLM, found that the presence of water was important for both the high country and the lower elevation sites.

When passing through southwest Montana in 1805 as part of the famous Lewis and Clark Expedition, Lewis commented on the local waterways and resources which they offered: "The Gallatin, Madison and Jefferson [rivers] are all formed of smooth pebble bottoms, transparent water and timber enough to support an establishment, and construction with brick or stone" (DeVoto 1953:174). Historic land use, like the prehistoric, tended to concentrate around water-based settings.

Hot springs and mud pots were especially attractive to prehistoric peoples. McLeod and Melton (1986:II-6) note that hot springs were used by aboriginal people during the prehistoric period, "possibly for religious purposes." A study in the Bearmouth area (Flint 1977:104) mentions the proximity of religious sites to hot springs. The Lewis and Clark journals describe how the Indians dug holes in the hot springs for bathing purposes (DeVoto 1953:238). The Shoshone people continue to be interested in these places as sources of mud for medicinal use and healing purposes (Tribal Members, personal communication 1996). Large hot springs were developed historically at both the north and south ends of the study area. Boulder and Pipestone Hotsprings are believed to have seen prehistoric use (Leetz personal communication 1996), but evidence of this use was likely obliterated during the historic development that took place prior to the 1920's (Taylor and Taylor 1998:50).

2.1.2 The Physical Environment: Avenues for Research and CRM

Numerous avenues of research related to the topography, geology and cultural landscape are available to the archaeologist. The locations of lithic procurement sources and attributes of lithic and earth-bearing materials are of primary interest. Volcanic ash lenses, if present in the stratigraphy, are valuable as temporal indicators. The specifics of natural site formation and deflation processes and aspects of cultural site selection and use also play heavily in the archaeologist's research. Modern technology and analytical techniques allow many new and refined avenues to decipher this information. The Cultural Resource Manager has all of these at his disposal, if affordable, when choosing a strategy for management at any given site. Depending on the particular need (or threat, if that is the case), the manager can employ data recovery techniques which allow

maximum benefit from current technology, with the least amount of disturbance to the site; thus leaving the greatest potential for future research and subsequently developed analytical procedures.

Obsidian Hydration is a calibrated, relative dating technique which relies on the natural, chemical properties of obsidian for temporal information. Obsidian takes on water, or hydrates, at a given rate through time; this hydration forms a layered rind which is visible under high magnification. Local influences of temperature and exposure to sunlight need to be considered in this analysis. The hydration rind on an artifact begins when the obsidian is exposed from a parent surface (e.g. during tool manufacture) and continues to thicken with time. By measuring this rind from a thin section of artifact researchers formulate a local "hydration" regime (Renfrew and Bahn 1991:136-137). This technique has been used extensively and successfully by Dr. Leslie Davis of Montana State University. Artifacts from several Whitetail Pipestone sites (24JF253, 24JF1583, 24JF1589) and the nearby vicinity at Steel's Pass (24MA565) have been dated by Dr. Davis using this method. (Also see Section 5.2.2).

Obsidian Sourcing is now a widely accepted method of linking an artifact to the area of its material procurement. Not widely used until about a decade ago, this method utilizes the quantities of trace elements unique to each obsidian flow as a "signature" for sourcing. Researchers have "typed" most known flows and can readily and economically determine the source location for obsidian artifacts. This opens numerous opportunities for studying the travel or trade routes of aboriginal peoples and lithic material preferences. Some obsidian artifacts from within the Whitetail Pipestone analysis area and others from nearby sites have been sourced by this method (Hughes 1998) (Results discussed in Section 3.1.2 and 5.2.1 below).

Volcanic ash lenses as time markers. Western Montana has experienced the fallout from several volcanic eruptions, the most recent of which was the May 1980 eruption of Mount St. Helens. Two other known volcanic events also left their mark on the area during the Late Pleistocene and Early Holocene. The eruptions of Glacier Peak and Mt. Mazama produced thin layers of ash across the study area. This was due, in large part, to our predominately-western air flow and mountainous topography. Guided by local weather patterns and topography, ash dropped to greater or lesser degrees in any given area. Glacier Peak ash is generally accepted to date in the vicinity of 11,200 BP (McLeod and Melton 1986:III-10, Greiser 1984:36) and Mt. Mazama at ca. 6700 BP. Ash layers are recognized as thin, light colored bands (usually appearing white) in sediments. These have been successfully used to date archaeological sites in Montana and

elsewhere. Just north of the study area at Indian Creek (24PW626), the site lies between ash layers. This information was correlated with projectile point styles and ^{14}C dates to definitively date the occupation (Davis 1984, Frison 1991:25, Greiser 1984:38).

Other avenues of research for environmentally-based archaeological studies include advances in geoarchaeology for the unraveling of natural site formation processes (Shiffer 1987, Waters 1992), rock art dating by AMS, radiocarbon and cation ratio (CR) methods (Francis et. al. 1993, Frison and Mainfort 1996:53), and numerous other current or newly developing methods and strategies.

*Cultural Resource Management o*pportunities through environmentally based methods are endless. With advances in technology, surely new opportunities will also come forward. Today, some of the non-disturbing avenues we can pursue include: Geographic Information Systems (GIS), Global Positioning Systems (GPS), ground penetrating radar (GPR), electro-magenetometry, satellite imagery, and aerial photography. Not only can we use this technology to determine patterns and correlations between cultural sites and certain attributes of geology, topography or water resources, but we can also view the landform from above, analyze environmental attributes from digital imagery, and "see" into the ground through radar and electromagnetic feedback. Evidence from these studies can lead to predictive modeling, and probability ratings for the distribution and density of cultural sites and cultural land uses.

The Montana Historic Preservation Plan recognizes "The Land" as an important heritage theme (Dill and Cornish 1997:8). The land was not purely "shaped by geologic forces, but (also) by the people who have lived in and visited Montana for thousands of years." Authors of the Plan realize that early peoples "followed the seasons and cycles of life" to "develop a series of cultures over the millennia." Much of the landscape on public lands has not seen modern development. These hinterlands hold the ability to unravel the mysteries of the region's aboriginal people. Heritage preservation laws and regulations mandate the consideration of these values before any development.

Site interpretation is often difficult for researchers in areas where topographic relief is high and annual precipitation low, largely due to a punctuated erosion regime (Frison 1991:17). The foothills and mountains of the study area provide these "optimum conditions for accelerated geologic activity." Consequently, much of the prehistoric record may be eroded away and much of what remains could be deeply buried (Frison 1991:17). These conditions must be taken into consideration when researching a site, and also in planning for future land uses. Not only the forces of nature, but also those of

historic and contemporary cultural activities can be responsible for opening the soils to accelerated geologic activity (e.g. erosion).

Site stabilization may be necessary when a site is actively eroding. Erosion can often be curbed or stopped with a simple procedure of adding a "water bar" across the gully upstream from the site, thereby directing the runoff away. This method requires some monitoring and upkeep, but is inexpensive and relatively non-intrusive.

2.2 Climate

Climatic reconstruction and change through time is most relevant to archaeologists for the period of human habitation in North America(~15,000years). However, knowledge of the prior record and punctuated episodes is also necessary to understand the landscape and evolution of vegetation and wildlife resources. Past climates are inferred usually by analysis of fossil pollen and glacial land forms. Climatologists use this evidence, along with sediment studies, to reconstruct local environments. Researchers worldwide see climate as a global phenomenon; however, climatic changes or regimes are not everywhere identical (Knight 1989:74). Archaeologists find that "reconstructed paleoecologies contribute significantly to the formulation and testing of hypotheses about prehistory" (p. 73). Climatic reconstruction can have great power in explaining both the cultural and natural processes which are emblematic in archaeological remains.

The following overview on past climates is derived primarily from information presented by Knight (1989:73-95) and McLeod and Melton (1986:III-1-15), cultural resource managers who have reviewed in detail prior research on the larger area surrounding the Whitetail Pipestone. Of particular interest to CRM are the pollen studies undertaken on the Continental Divide at Lost Trail Pass Bog (Mehringer et. al 1977) and near Helena (Brant 1980). The reader may wish to consult these sources for more detail.

Pleistocene glacial evidence from mountain ice fields and continental ice sheets of last glacial period are of greatest interest to archaeologists. During this time, just prior to the first evidence of human habitation, ice sheets covered much of North America, just north of the study area. The "ice free corridor" hypothesis (Knight 1989:76-78) maintains that a gap between the Cordilleran (mountain) Glacier Complex on the west and the Laurentide (continental) Ice Sheet on the east allowed dryland transportation southward from Beringia to the present study area. The Pleistocene Glacial Period (150,000 - 10,030 B.P.) was punctuated by a series of rises and falls in glacial activity, known regionally as the Bull Lake, Wisconsin and Pinedale episodes. Understanding the complexities of this activity is problematic. Researchers believe that the larger (Laurentide) ice sheet and (Cordilleran) mountain complex advanced and retreated unevenly during these

episodes, making the exact dates when an ice-free corridor opened still somewhat controversial. Dates of 19,000 - 20,000 years ago and again after 14,000 years ago have been postulated (Knight 1989:78 after Stalker 1980:30) Human migration into the contiguous United States under the "ice free corridor" theory, most likely occurred sometime during the late Wisconsin, or Pinedale episodes of those dates (Knight 1989:76-78).

The late Pleistocene-mid-Holocene reflect the changing environment brought about by important climatic and geologic events. Research in bogs south of Helena show glacial flour directly overlain by Glacier Peak volcanic ash with no vegetative record prior to about 11,250 B.P. (Knight 1989:79 after Brant 1980 and Herbort 1987:83). At Lost Trail Pass Bog in the Bitterroot Range, the alpine glacier had wasted away by 12,000 B.P. The climate immediately following deglaciation was probably much cooler than the present. Pollen diagrams and sediment studies show a long-term warming trend. This is corroborated by the disappearance of cold-adapted animals and an increase in various dry-land-adapted mammals (McLeod and Melton 1986:III-15). The Plains climate became increasingly continental with warmer summers and colder winters. Grasslands expanded toward the northwest and east; on the northwestern Plains the vegetation changed from good browse to short grass, which likely added to the extinction of ice age megafauna including the mammoth, giant bison, musk ox, saber-toothed cat and camel (Knight 1989 after Bryson, Baerreis and Wendland 1970:72: McLeod and Melton 1986:III-4-8).

Climatic episodes of the late Pleistocene and Holocene, when humans have been present in North America, are described in terms of Glacial, Boreal, Atlantic, Scandic, Pacific and Recent. Temporal limits and sub-divisions for these episodes vary by researcher and by regional regime. The following table, based on review by Frison (Frison and Mainfort 1996:60), illustrates what researchers generally believe about the paleo-environment of the Northern Plains.

The Altithermal marks a significant biotic event at ~7000 B.P. Grasslands reached their maximum extent at that time (Knight 1989:81 after Bryson, Baerrels, and Wendland 1970:70). Research at Lost Trail Pass Bog implies warmer, but not necessarily drier-than-present conditions until ca. 8490 to 5060 B.P. (Knight 1989:81, Mehringer et. al. 1977:364-366). The warmth of the Atlantic episode is known as the Altithermal or Hypsithermal interval (Knight 1989:75), and may have been accompanied by extreme drought; but, this is not empirically supported by paleo-botanic evidence. In some studies, the Atlantic episode is correlated with Mazama ash (Knight 1989:81 after Waddington and Wright 1974:182).

Postulated Climatic Episodes and Events of the Late Pleistocene and Holocene for the Great Plains.

Table 1.

Episode	Estimated Dates*	Events and Trends
Full Glacial	to ca. 13,000 B.P.	Cooler summers, milder winters than at present; boreal forest widespread in Northern Plains and south to Kansas.
Late Glacial	ca.13,000-10,800 B.P	Summers cooler, winters warmer and less severe than present, boreal forest retreats northeast, grasslands expand; mean temperatures a few degrees Celsius cooler than present.
Pre-Boreal	ca. 10,800-9530 B.P.	Warming trend, grassland expansion continues. Holocene begins at ca. 10,870 B.P.
Boreal	ca. 9530-7900 B.P.	Change in atmospheric circulation patterns, rapid wasting of continental ice sheet. Climate increasingly continental; warmer summers and cooler winters. Grassland predominates by ca. 9500 B.P.
Atlantic	ca. 7900-5000 B.P.	The Altithermal interval. Stronger westerlies, more Pacific and less Artic airflow, climate substantially warmer and drier than present, extensive desiccation of the Plains. Maximum expansion of grasslands.
Sub-Boreal	ca. 5000-2900 B.P.	Colder, more precipitation in the Northern Plains; increased Arctic airflow.
Sub-Atlantic	ca. 2900-1600 B.P.	General climatic deterioration. Summers wetter, winters stormier.
Scandic	ca. 1600-1225 B.P.	Warming trend, transition period. Return toward Atlantic conditions; warmer, drier in the Northern Plains.
Neo-Atlantic	ca. 1225-800 B.P.	Increased moisture, warming trend peaks; more Gulf (tropical) airflow, increased summer rain in central and Northern Plains. Prairies move westward at expense of steppe. Increase in tree pollen, western Nebraska, ca. 1000 B.P. Maximum westward expansion of native maize cultivation west of the Missouri River.
Pacific	ca. 800-400 B.P.	Stronger westerlies, increased Pacific airflow, return to drier conditions. Cooler and drier in the central and Northern Plains; steppe conditions move eastward, prairie retreats. Withdrawal of native horticultural peoples from the western central Plains.
Neo-Boreal	ca. 400-100 B.P.	The Little Ice Age. Colder and moister, cool summers, cold autumns; glaciers reform in the Rockies.
Recent	post 100 B.P.	Stronger westerlies beginning about 1883; drier and warmer in the Plains. End of the Little Ice Age, beginning of present-day climate.

* The date ranges assigned to each episode vary from one publication to the next; the dates expressed here are those used by Wedel (1986).

Subsequent to this, the boreal forest slowly moved southward and the grasslands westward to about their present limits (Knight 1989:82). Alpine glaciers advanced.

Conditions may have been essentially modern by about 4500 BP. Glaciers advanced and retreated during subsequent periods. Trends are identifiable in pollen studies, but represent only regional variations.

The late prehistoric aboriginal ecology and climate may be visualized through the eyes of Lewis and Clark, whose journal entries while traveling the Jefferson Valley make note of their sentiments (DeVoto 1953:170-171). On July 28, 1805 the Lewis and Clark party found the mosquitoes troublesome, and the temperature warm to hot. Wind was from the southwest and a lightning storm, accompanied by rain showers rolled through the valley. Valley heat was "suffocating" during the day and cold at night.

Today, the climate in the lowlands of the study area is mostly dry, with some moister areas in the nearby mountains. The frost-free season depends on elevation; it is generally around 90 days. The area's high latitude and high altitude are accompanied by long summer daylight periods and intense sunlight that may enhance growing conditions (Knight after Maugham 1941:966). Beyond these generalities, significant macroclimatic and microclimatic variations across the study area are associated with the Continental Divide and the generally mountainous topography.

The majority of the analysis area lies immediately east of the Continental Divide. The west slopes receive more moisture and lighter winds than those on the east (Knight 1989:34). On the east, the climate, though modified by westerlies and the mountainous topography, is Continental (Knight after NOAA 1971:1). Seasonal characteristics of precipitation also differ from west to east. Precipitation is more evenly distributed over the year on the west, except the months of July and August, which can be droughty (Knight after Pfister et. al. 1977:13). About 70% of the total east side precipitation occurs between April and September. Precipitation ranges from 10 to 28 inches annually and correlates highly with elevation due to orographic effect (WP EIS 1998:III).

West slope winters are generally milder than those to the east of the divide. (Knight 1989:34 after Mueggler and Stewart 1980:94). However, snowpack leaves the untimbered, southeast-trending slopes of the Whitetail Pipestone earlier than the surrounding mountains. The east-slope winter can also be ameliorated indirectly as the mountain ranges promote rapid decent of the warm air from aloft, a phenomenon known as the chinook winds. Chinook winds accomplish more than simply making outdoor temperatures tolerable. Along with general drifting action, chinooks prevent continuous snow cover and facilitate winter grazing, a salient aspect of human ecology throughout historic times (Knight 1989:34).

2.2.1 Climate: Significance to Prehistoric Peoples

The Whitetail Pipestone offers diverse climates. Intermontane basins and slopes in the rain shadow of larger mountains differ dramatically from the nearby open and expansive river basin. Frison (1991:2) sees this as reason that no single prehistoric or cultural model that will suffice for the entire Northwestern Plains.

Glacial period limitations allow formulation of an "ice free corridor" human entry hypothesis for North America. It is widely accepted that certain areas of North America were covered with glacial ice as prehistoric humans were making their way into the Continent (McLeod and Melton 1986:III-10-11, Knight 1989:76:77). Continental ice sheets advanced and receded, rendering the landscape either suitable or unsuitable for human habitation or travel.

The Altithermal hypothesis includes a time between ca. 7900 and 5000 B.P. when a period of much warmer and drier conditions prevailed. A substantial decrease in human occupation of the Plains has been postulated (Frison and Mainfort 1996:59 after Antevs 1955, Reeves 1973); data are so far inconclusive.

Subsistence strategies such as the 'seasonal round' or 'patterned migration' have been applied as models to explain prehistoric hunter-gatherer lifeways in southwest Montana (Ryan personal communication 1998). These models are based on ethnographic and archaeological evidence, and suggest that aboriginal people wintered in larger more stationary camps, then broke into smaller groups to follow traditional routes (or rounds) throughout a customary homeland or range. Groups, or certain peoples from the group (bands) followed the ripening berries and roots and migrating animals which could predictably be found in certain areas at certain times of the year. During this "round" they would incorporate visits to lithic quarry sites and other known procurement areas.

2.2.2 Climate: Avenues for Research and CRM

Many avenues exist for *reconstruction of past climates*; pollen core samples which illustrate temporal differences in vegetation are primary candidates. Differences in vegetation type are understood to correspond with differences in climate. Other micro- and macro- botanical studies, including phytolith and diatom analysis, also aid in the reconstruction of past climates. These methods were utilized at Steel's Pass Archaeological Investigation (Davis 1993: 35-42) roughly twenty miles south of the Whitetail Pipestone, in the Highland Mountains. In that study, Davis assigns the changes in vegetative communities to fluctuations in moisture and temperature in the local area. Similar controlled excavations and data recovery in the Whitetail Pipestone would provide good comparative information for the vicinity.

Pollen and Phytolith studies are often used in the reconstruction of past environments. Pollen core samples generally produce the best climatic evidence from undisturbed "acidic and poorly aerated peat bogs and lake beds" which are remote from significant human activity (Renfrew and Bahn 1991:208). The upper Whitetail meadows, above the Whitetail Reservoir, provides a prime example of undisturbed deep anaerobic soils and bio-built material. This meadow is hundreds of acres in size, and very near the Continental Divide. Because there is no climatic evidence previously researched for the study area, it seems that the Whitetail meadows would be a good candidate for pollen core sampling.

Many *natural site formation processes* alter the makeup of an archaeology site. Organic decay adversely affects most of the non-lithic debris at a site. Water and sunlight are the primary natural agents which act in the weathering process to degrade the organic material at a cultural site. These agents can act singly, or in synergistic combination, with wind and other environmental factors to deflate or build up soil deposition at the site (Shiffer 1987:179). Understanding these processes, past and present, is key to interpreting the archaeological record.

2.3 Vegetation

Change through time and trends in the vegetation of the study area is commensurate with the climatic and environmental changes described above. Grass and sagelands expanded, first in response to the moist cool period as the glaciers retreated, and then relative to the warming trend which peaked at the altithermal. Essentially modern vegetative regimes were present by about four thousand years ago. Native peoples manipulated the vegetation through the use of fire, probably throughout prehistory.

When the Lewis and Clark Expedition made their way up the Jefferson Valley in the early 1800's, they described an environment which is much the same as one would describe today (DeVoto 1953:173-178): On July 31, 1805, as they entered the valley, they found the "river ...rapid and considerable quantity of timber in it's bottoms, gradually lessening..." On August 3, from the heart of the valley, Lewis noted that "plains near the mountains rise higher and are more broken with some scattering pine near the mountains. In the leaveler parts of the plain and river bottoms there is no timber except a scant proportion of cottonwood near the river. Mountains... (were) also scantily supplied with timber. Small pine the prevalent growth;...(was) of the pitch kind, with a short leaf.... A high plain of about 8 miles with prickly pears and bearded grass" stretched out before them.

Historic changes in the vegetation of the Whitetail Pipestone study area are noteworthy. Livestock use began in the 1890's, with limited management. Range condition suffered from intense grazing pressure, as well as early mining and logging activities. Changes in plant vigor and composition at low elevations likely contributed to watershed degradation of some basins. By the 1960's, implementation of grazing systems resulted in an improved trend in range condition (WP EIS 1998:III). Much of the timber in the Boulder mountains was heavily cut-over during the mining boom of the past century (Knight 1989:40). Logging bypassed only a relatively few large, old trees.

Today the vegetation is generally sagebrush/grass on low elevation, dry slopes, Douglas-fir forests on mid-slopes, and lodgepole pine on the high ground. Whitebark pine stands are scattered over the highest elevations. Vegetation patterns are typical of dry eastside Rocky Mountain landscapes. At low elevations on the south and east slopes of the study unit, sagebrush and dry Douglas-fir habitats predominate. On the north and west portions of the Whitetail Pipestone, mixed conifer forests of lodgepole pine, whitebark pine, spruce, and subalpine fir are interspersed with wet meadows. Some meadows are greater than 100 acres in size; with the single wet meadow in the region of the Whitetail Reservoir at 2923 acres. In the area around Whitetail Peak and Haystack Mountain are found numerous wet meadows and in the higher parks, lush grasses, sedges, and willows. The drainages are lined with riparian aspen and willow. The eastern portion and lower elevations of the unit are largely grassland and shrubland, replaced further down by cultivated croplands in the Whitetail, Boulder and Jefferson Valleys. Riparian areas include streams, ponds, swamps, wet meadows, sidehill seeps and the habitats immediately adjacent to them (about 100 feet). Typically these are the most biologically diverse and productive habitats of the Rocky Mountains. They provide highly nutritious forage for many wildlife species and also provide travel corridors for many species because of dense shrub cover (WP EIS 1998:III).

Recent changes in the vegetation of the study area are caused by human development and use. Changes to the habitat are the result of motorized trails, roads and railroads, timber harvest and mining, as well as the effects of fire suppression and livestock grazing. Vegetation change is evidenced in the pioneering of conifers into low elevation shrublands and by accelerated erosion and sedimentation, loss of plant cover, noxious weed invasion and the altered makeup of riparian areas (WP EIS 1998: III).

2.3.1 Vegetation: Significance to Prehistoric Peoples

Cultural use of plants is evidenced in ethnographic and historic accounts of native people. Early botanists and researchers mention ways in which plants were used for food, material culture, medicines, and spiritual well-being (Blankinship 1905, Hart 1992, Malouf 1971). Frison (1991:3) finds that there is "sufficient evidence from both archaeology and ethnology to confirm the past use of plant food resources on the Plains...undoubtedly significant." Prehistoric cultural use often reflects conditions that affect the animals they hunted. A variety of grasses, forbs and shrubs supported grazing and browsing mammalian fauna; a number of seeds, roots, tubers, berries, greens and fruit provided economic resources to support a small number of human groups. These human groups were "sometimes rather precariously perched at the top of the food chain" (Frison 1991:8).

Utilitarian items of "material culture" such as arrowshafts, bows, tipi poles, traps, mats, etc. all might have been constructed with products from the biological environment; such use is documented in the journals of Lewis and Clark on August 2, 1805, while in the Jefferson Valley (DeVoto 1953:175-176). Lewis wrote: "The Indians in this part of the country appear to construct their lodges with the willow boughs and brush; they are small of a conic figure and have a small aperture on one side through which they enter." A lodge such as this, believed to be around 100 years old still stands in the Bull Mountains, just east of the study area (Pallister 1992:33-59).

Hunter Gatherer lifeways may have depended on seasonal rounds as a strategy for most efficient use of the environment. Flora changes are abrupt and sudden in response to changes in elevation, precipitation, soils and topography. The available plant food for human groups changed throughout the year, as it also did for the animals they hunted. Early spring is the time for "tender shoots of plants and greens" (Frison 1991:13). Spring is also the time for certain roots and bulbs. June is generally considered the "camas" collecting month (Malouf 1971:23). Bitterroot, which is known to exist in the study area, was a primary crop for the Flathead and Kutenai (Hart 1976:47). Some fruits and berries begin to ripen in mid-to-late summer and last into the fall. Seeds generally mature near the end of summer or fall. Plant resources were just part of the larger picture of prehistoric lifeways: "...present evidence strongly indicates that prehistoric economic strategies were seldom limited to any given life zone or food source.... Broad spectrum hunting and gathering...best characterizes...prehistoric life on the Northwestern Plains" (Frison 1991:14).

The following table lists ethnographically or historically identified plants for various Indian Tribes in the Plains, Plateau and Great Basin areas; it was compiled by Deaver and Deaver (1986:29-30), and has been adapted for the Whitetail Pipestone area, in consultation with National Forest Ecologist, John Joy of Whitehall. More plants were later identified in a 1995 ethnographic overview (Deaver 1995, Vol 1:76, Vol 2:A4.20-66). For more in-depth research, the reader might consult Deaver's 1995 work.

Table 2. Wild Plants with Aboriginal Use - Native to the Whitetail Pipestone

Common Name	Scientific Name	Common Name	Scientific Name
	Roots, Tubers, Corms		
wild onion	*Allium cernuum*	arrowleaf balsamroot	*Balsamorrhiza sagittata*
common camas	*Camassia quamash*	western springbeauty	*Claytonia lanceolata*
dogtooth lily	*Erythronium grandiflorum*	yellow bell	*Fritillaria pudica*
pigmy bitterroot	*Lewisia pygmaea*	bitterroot	*Lewisia rediviva*
dotted blazingstar	*Liatris punctata*	mountain lomatium	*Lomatium cous*
	Lomatium dissectum	nineleaf limatium	*Lomatium triternatum*
nodding microseris	*Miceroseris nutans*	painted yellow pond lily	*Nuphar variegatum*
yampa	*Perideridia gairdneri*	western bistort	*Ploygonum bistortoides*
arum-leaved arrowleaf	*Sagittaria cuneata*	common arrowleaf	*Sagittaria latifolia*
western bulrush	*Scirpus acutus*	great bulrush	*Scirpus acutus*
edible valeriana	*Valeriana edulis*		
	Berries, Fruits		
western serviceberry	*Amelanchier alnifolia*	kinikinnick	*Artostaphylos uva-ursi*
Oregon grape	*Berberis repens*	red dogwood	*Cornus stolonifera*
rough fruited fairy-bell	*Disporum trachycarpum*	silver-berry	*Elaegnus commutata*
strawberry	*Fragaria virginiana*	rocky mountain juniper	*juniperus scopulorum*
twin-berry honey-suckle	*Lonicera involucrata*	plains pricklypear	*opuntia polyacantha*

Berries, Fruits (continued)

Common Name	Scientific Name	Common Name	Scientific Name
chokecherry	*Prunus virginiana*	golden currant	*Ribes aureum*
squaw current	*Ribes cereum*	swamp currant	*Ribes lacustre*
redshoot gooseberry	*Ribes setosum*	wild rose	*Rosa sp.*
red raspberry	*Ribus idaeus*	black elderberry	*Sambucus melanocarpa*
buffalo-berry	*Shepherdia argentea*	Canadian buffalo-berry	*Shepherdia canadensis*
western snowberry	*Symphoricarpos ocidentalis*	huckleberry(?)	*Vaccinium globulare*

Seeds

American sloughgrass	*Beckmannia syzigachne*	Rocky mountain bee plant	*Cleome serrulata*
Canada wildrye	*Elymus canadensis*	northen bedstraw	*Galium boreale*
blue flax	*Linum perenne*	Indian ricegrass	*oryzopsis hymenoides*
whitebark pine	*Pinus albicaulis*	limber pine	*Pinum flexilis*
Douglas knotweed	*Polygonum douglasii*		

Leaves, Stems, Flowers

black tree lichen	*Alectoria fremontii*	showy milkweed	*Asclepias speciosa*
sedge	*Carex sp.*	elk thistle	*Cirsium foliosum*
Rocky Mountain bee plant	*Cleome serrulata*	mountain sorrel	*Oxyria digyna*
western dock	*Rumex occidentalis*	greasewood	*Sarcobatus vermiculatus*
common cattail	*Typha latifolia*	stinging nettle	*Urtica dioica*
yucca*	*Yucca glauca*		

Inner Bark, Sap

whitebark pine	*Pinus albicaulis*	lodgepole pine	*Pinus contorta*
ponderosa pine	*Pinus ponderosa*	plains cottonwood	*Populus deltoides*
quaking aspen	*Populus tremuloides*	black cottonwood	*Populus trichocarpa*

*not in the Whitetail Pipestone, but close by

2.3.2 Vegetation: Avenues for Research and CRM

Reconstruction of past environments and the cultural use of plants can be reached through avenues of research similar to the scientific methods applied for climatic reconstruction. Pollen core samples, micro and macro botanical studies, and diatom analysis are used to determine past vegetative environments. Radiocarbon or ^{14}C dating (discussed below) is especially noteworthy for biotic materials. Dendrochronology and fire-scar analysis are readily available to the National Forest archaeologist and Cultural Resource Manager. Many of these methods were utilized at Steel's Pass Archaeological Investigation (Davis 1993: 135-142) and produced results which are pertinent to the Whitetail Pipestone analysis. (Investigation results discussed in Part IV).

Ethnographic accounts of concentrated or highly specialized plant use, such as described by the Flathead Indians for camas (Malouf 1971) should be kept in mind when an area is known to hold concentrations large enough to warrant systematic, or even opportunistic collection. Camas is present today in the meadows of Elk Park and presumably other meadows in the Whitetail. The investigator should pay special attention when inventorying these areas, since the potential for 'roasting pits' or other camas preparation sites is increased. (See "hunter-gatherer lifeways" above and "ethnobotany" discussion below.)

Radiocarbon dating is the principal technique by which archaeologists and physical anthropologists construct their calendar of the past 50,000 years. The method relies on the fact that a radioactive carbon isotope, ^{14}C, is present in the structure of all living organisms. This collection of atoms begins to decrease, at a given rate through time, when the organism dies, and thus serves as a clock to determine how much time has lapsed (Hedges and Gowlett 1986:100). A much smaller sample can be analyzed through the new Accelerated Mass Spectrometry (AMS) technique. Rarely does a major archaeological investigation take place, which does not use the absolute dating of the radiocarbon method.

Pollen, Phytolith and Macro and Micro botanical studies are possible from vegetative evidence collected in "pollen traps" at an archaeology site. This evidence is obtained by floatation analysis of soils. Identification of available "pollen traps" is best determined on site during an archaeology project, and may include, but is not limited to core samples from undisturbed wet/bog areas, cracks and depressions in cultural areas (e.g. hearth) or geologic features in stratified deposits. This evidence is recovered in the laboratory through floatation and sieving techniques which yield macrobotanical remains, seeds, plant residues, wood, and charcoal, as well as, microbotanical remains, pollen,

fossil cuticles, phytoliths, diatoms and rock varnish. These remains are identified under high powered microscopes (usually by contracted specialists) which can provide statistical analyses of the results. Evidence from such data can be related to how the deposit was formed, past climate, natural vegetation and environmental attributes; it can also help decipher cultural land usage, diet, food processing, building and craft materials, technology and fuel of the inhabitants (Renfrew and Bahn 1991: 207-214). Evidence of this sort would most likely be obtained through archaeological testing or data recovery at a site under investigation.

Dendrochronology, fire scar analysis and other research methods may be available "in-house" to government archaeologists. Tree rings (similar to varve layers in glacial lakes) have a growth that varies with climate, being strong in the spring and then declining in the winter; the more moisture or heat available, the wider the annual ring. These variations form the basis of a major dating technique, known as dendrochronology (Renfrew and Bahn 1991: 207). While this technique has rarely been used in the Rocky Mountains, a similar measure, that of *fire scar analysis*, has been used extensively to determine the frequency of natural and culturally caused fires (Barrett and Arno 1982:647-651, Morris 1992:79-90).

Ethnobotany, the ethnographic description of plant uses by indigenous peoples has been the subject of numerous publications and research papers (Hart 1992, Malouf 1971, Blankinship 1905, Gilmore 1913 and others). The presence of plants with known cultural affiliation is often seen as an indication that related archaeology sites may be present. Paleoethnobotany (or archaeobotany) is the study of past human use of plants (Renfrew and Bahn 1991:233). Plant sources identified in the ethnographic record can be correlated with the archaeological record through macro- and micro-botanical studies resulting in inferences about economic use.

Opportunities for Cultural Resource Management related to the vegetation of a given area are widely varied. For example, agency archeologists or botanists might work with Tribes to compile a list of plants that are culturally important or still collected for traditional use. Another possibility is the study of past fire frequencies to determine the degree and extent of aboriginal fire use to alter the vegetation. A third possibility, relevant to future investigators, would be to establish whether or not camas, a well utilized food source for some aboriginal peoples, is native to the Whitetail meadows. If so, particular attention, in future inventories, should be paid to the peripheral areas to determine if archaeological sites which are the result of camas gathering or roasting activities are present.

2.4 Wildlife and Fisheries

Similar to the plant communities' dependence on climatic change, the wildlife of the area has also evolved commensurate with changes in the ecosystem and with their available food base (Also discussed under 2.2 above). Twelve thousand years ago, as the Pleistocene glaciers were receding, mega-fauna, adapted to the cold environment were present in North America. These were gradually replaced with smaller species; some, such as the mammoth, sloth, horse and camel became extinct altogether.

Ice age fauna of the late Pleistocene that were known to inhabit Montana include: big brown bear, big horn sheep, camel, caribou, fox, gopher, ground squirrel, horse, long-horn bison (*Bison latifrons)* and *Bison occidentalis*, modern bison (*Bison bison)* and *(Bison athabasqua),* antelope, beaver, cervid (species unknown), deer, elephant (mammoth), lynx, marmot, mountain lion, mouse, rabbit, woodland musk ox and wolf (McLeod and Melton 1986: III-8 who researched Butler, Melton, Rasmussen and Forbis). Other sources suggest that prairie dogs and birds should be included in this list (Foor pers. comm. 1999).

Archeofauna represented at the Steel's Pass site in the nearby Highland Mountains include deer, antelope, Bighorn sheep, mountain goat, elk, bison, moose, grizzly bear, mountain lion, fox, hare, rabbit, porcupine and grouse (Davis 1993:42-48). Faunal remains present at the Lower Whitetail site in the study area include bison, elk, deer, antelope and beaver.

Historically, the Lewis and Clark Expedition in 1805-1806 observed native wildlife as they travelled through the Jefferson River Valley, both to and from their west coast visit. In a particular segment of the journey, from the Three Forks (of the Missouri) on July 28th 1805 to August 10, 1805 when they encountered the Beaverhead River, (DeVoto 1953: 170-184), Lewis made a number of notes about the wildlife resource; he mentions the presence of "a vast number of beaver in many large dams". The group killed elk, deer, antelope, big horn sheep and ducks for meals. They had "an elk or brown bear" visit during the night and saw goats, deer, burrowing squrrils, mallards and red-headed fishing ducks, geese, several rattle snakes, black woodpeckers, crains and elk. Lewis noted a second time the "great quantity of beaver," otter and musk-rats in the Jefferson and Big Holes Rivers and talks of "killing a panther" (mountain lion) enroute. Lewis made special note of the absence of buffalo, which they apparently expected to see in the valley; though they did find "evidence of past" herds.

Native wildlife for the Butte District BLM, which encompasses the Whitetail Pipestone study area, was researched by Deaver and Deaver in 1986 (p. 19-23). The

following table is adapted from their work. Changes which reflect the fauna of the Whitetail Pipestone were made in consultation with Forest Service Wildlife Specialist, Betsy Follman (personal correspondence 3/22/99). For the researcher with a particular interest in faunal resources, also see Deaver's 1995 ethnographic documentation (1995 Vol 1:83-87, 120-124 and Vol 2:A4.1-19).

Table 3. Wildlife Native to the Whitetail Pipestone Analysis Area

Common Name	Scientific Name	Common Name	Scientific Name
	Insectivora (Shrews)		
Pygmy shrew	*Microsorex hoyi*	Merriam's shrew	*Sorex merriami*
Preble's shrew	*Sorex preblei*	Northern water shrew	*Sorex palustris*
Common shrew	*Sorex cinereus*	Vagrant shrew	*Sorex vagrans, S. obscurus*
Dwarf shrew	*Sorex nanus*		
	Chiroptera (Bats)		
Hoary bat	*Lasiurus cinereus*	Silver-haired bat	*Lasionycteris noctivagans*
Big brown bat	*Eptesicus fuscus*	Western big-eared bat	*Plecotus townsendi*
Fringed bat	*Myotis thysanodes*	Long eared bat	*Myotis evotis*
California bat	*Myotis californicus*	Long legged bat	*Myotis volans*
Little brown bat	*Myotis lucifungus*	Western small-footed bat	*Myotis ciliobibrum*
Yuma bat	*Myotis yumanensis*		
	Lagomorpha (Rabbits)		
Pika	*Ochotona princeps*	White-tailed jackrabbit	*Lepus townsendi*
Mountain cottontail	*Silvilagus nuttalli*	Snowshoe hare	*Lepus americanus*
	Rodentia (Rodents)		
Porcupine	*Erethizon dorsatum*	Beaver	*Castor canadensis*
Northern pocket gopher	*Thomomys talpoides*	Hoary marmot	*Marmota caligata*
Yellow-bellied marmot	*Marmota flaviventris*	Yellow pine chipmunk	*Eutamias amoenus*
Least chipmunk	*Eutamias minimus*	Golden-mantled ground squirrel	*Citellus lateralis*

Common Name	Scientific Name	Common Name	Scientific Name
Redtail chipmunk	*Eutamias ruficaudus*	Columbian ground squirrel	*Citellus Columbianus*
Thirteen-lined ground squirrel	*Citellus tridecemlineatus*	Northern flying squirrel	*Gaucomys sabrinus*
Black-tailed prairie dog	*Cynomys ludovicianus*	Richardson's ground squirrel	*Citellus richardsoni*
Unita ground squirrel	*Citellus armatus*	Western harvest mouse	*Reithrodontomys megalotis*
Red squirrel	*Tamiasciurus hudsonicus*	Deer mouse	*Peromyscus maniculatus*
Western jumping mouse	*Zapus princeps*	Muskrat	*Ondatra zibethica*
Northern grasshopper mouse	*Onychomys leucogaster*	Sagebrush vole	*Lagurus curtatus*
Bushy-tailed woodrat	*Neotoma cinerea*	Montane heather vole	*Phenacomys intermedius*
Northern bog lemming	*Synaptomys borealis*	Meadow vole	*Microtus pennsylvanicus*
Red-backed vole	*Clethrionomys gapperi*	Water vole	*Arvicola richardsoni*
Montane vole	*Microtus montanus*	Long-tailed vole	*Microtus longicaudus*
	Carnivora (Carnivores)		
Mountain lion	*Felis concolor*	Lynx	*Lynx canadensis*
Bobcat	*Lynx rufus*	Grizzly bear	*Ursus arctos*
Black bear	*Ursus americanus*	Red fox	*Vulpes vulpes*
Wolf	*Canis lupus*	Coyote	*Canis latrans*
Fisher	*Martes pennanti*	Marten	*Martes americana*
River otter	*Lutra canadensis*	Wolverine	*gulo gulo*
Striped skunk	*Mephitis mephitis*	Badger	*Taxidea taxus*
Mink	*Mustela vison*	Western spotted skunk	*Spilogale gracilis*
Short-tailed weasel	*Mustela erminea*	Black-footed ferret	*Mustela nagripes*
Least weasel	*Mustela nivalis*	Long-tailed weasel	*Mustela frenata*
	Artiodactyla (Even-Toed Ungulates)		
Pronghorn	*Antilocapra americana*	Wapiti	*Cervus elaphus*
Mule deer	*Odocoileus hemionus*	White-tailed deer	*Odocoileus virginianus*
Bison	*Bison bison*	Moose	*Alces alces*
Bighorn sheep	*Ovis canadensis*	Mountain goat* (not in WP, but in immediately adjacent ranges)	*Oreamnos americanus*

Current wildlife in the analysis area is documented in the Whitetail Pipestone Environmental Impact Statement (EIS 1998:Ch. III). The following summary is taken from the draft EIS:

Elk and deer use the north end of the analysis area year-around. This portion supports most species typical of mid-elevation, east side, Rocky Mountain sites. Rocky Mountain mule deer is a year-round native to the Whitetail Pipestone; numbers have declined in recent years. The area also provides year round habitat for moose. Riparian areas, wet meadows and early seral stands provide foraging habitat; adjacent forested lands provide cover. Roughly 250-300 elk, with numbers difficult to estimate because of migration patterns, use the area. The wet meadow surrounding the Whitetail reservoir provides spring and summer range for elk, as well as important nursery habitat; it may contain such rare species as wolverine. Traditional elk calving areas are located in the center of the analysis area along the sageland and timber boundary zone. Calving generally occurs from mid may to mid June. On the east is year round habitat for mule deer, while elk use it as winter and spring range. The southern end is year-round habitat for elk and mule deer, and is an important winter range for both species, as well as a calving and fawning area. The southeastern edge supports a herd of antelope and other wildlife typical of the drier habitats east of the Rockies.

As mentioned above (see 2.3), riparian areas are typically the most biologically diverse and productive of the Rocky Mountain habitats. They provide highly nutritious forage for many wildlife species and also act as travel corridors, because of dense shrub cover.

Native fisheries in the headwaters channels of the Whitetail Pipestone have been altered by stream channel changes and by historic stocking (WP EIS 1998: III). Westslope cutthroat is native to the area, as are others. Protein residue analysis on ground-stone from site 24JF1583 returned results positive to "catfish antisera." Laboratory researchers inferred the possible processing of a native member of the catfish, carps, minnows, or suckers family (Cummings and Puseman 1995:3).

Historic change. Stocking non-native trout was widespread in the late 1800's and early 1900's. In 1889, rainbow, brown and brook trout were first introduced into Montana by the US Bureau of Fisheries. Over the next 70 years, nonnative trout were stocked in most streams and lakes capable of supporting a fishery. Mining and processing of gold, silver, lead, copper and zinc within the Boulder River drainage has been extensive.

Metals from acid mine drainage and leaching and erosion of old mine tailings impair water quality and depress trout populations (EIS 1998:III).

Fisheries today include pure Westslope Cutthroat Trout populations in the upper extremes of some drainages. Others noted in the WP EIS by drainage are: longnose and white sucker, longnose dace, mountain whitefish and mottled sculpin in Bison Creek; brown and brook trout, mottled sculpin, white sucker and redside shiner in Big Pipestone Creek and genetically pure westslope cutthroat and eastern brook in Halfway Creek. Whitetail Creek was stocked with cutthroats and brook in 1927 and 1953, and presently includes brown, brook and rainbow. Grouse and Gillespie Creeks and others not listed do not support fish. Delmoe Lake has been consistently stocked with yellowstone cutthroat and rainbow and includes longnose suckers and redside shiner. The two large reservoirs, Whitetail and Delmoe, are not natural.

2.4.1 Wildlife and Fisheries: Significance to Prehistoric Peoples

Food and material culture for native people was available from a diverse variety of faunal resources. "Throughout most of the western United states, the larger ungulates have constituted the principal subsistence focus..." (Deaver and Deaver 1986: 31-32).

Hunter-gatherer lifeways for early people in the study area were heavily reliant on faunal resources. Deaver and Deaver (1986: 33) summarize a subsistence strategy which would be most practical given the availability of plant and animal resources which includes:

> reasonable concentrations of mule deer and local concentrations of wapiti, white-tailed deer, and bison. Pronghorn occurred in the open areas. Plant resources were common and some local concentrations (bitterroot, cous, wild parsley, and camas) existed. The most efficient subsistence strategy would have involved a dependence on mule deer with opportunistic use of bison and wapiti concentrations. Scheduled plant gathering would have been profitable near concentrated plant food sources and opportunistic utilization of dispersed plants would have been possible over most of the area through all but the winter months. This is the pattern seen at the Pilgrim tipi ring site with deer best represented in the faunal assemblage, followed by bison and possibly antelope and circumstantial evidence for seasonal plant use (Davis et. al. 1982). A similar pattern exists at many of the sites in the southern portion of the District. However the presence of occasional bison kills along with bison bones in many sites suggests that, when bison existed in sufficient numbers, they may have become the primary game focus temporarily.

Ethnographic evidence from the Flathead tells of the "trail to the buffalo," the seasonal trip across the Rocky Mountains to an area that they used to inhabit on a more long-term basis. This trail crossed the divide somewhere in the vicinity of Butte, Montana, interpreted by some to be over Pipestone Pass (Beck 1989:29).

2.4.2 Wildlife and Fisheries: Avenues for Research and CRM

Radiocarbon dating, like the radiocarbon and AMS techniques described in Chapter 2.3, is the primary way in which archaeologists date faunal remains. Burned bone is often very well preserved for carbon dating. "Charcoal has...proved the most reliable material from which to take samples for radiocarbon dating" (Refrew and Bahn 1991:214).

Faunal analysis and taphonomy are both ways to obtain information from animal bones in the archaeological record. Faunal analysis has evolved in ways similar to plant studies; animal remains have, however, achieved a much higher degree of importance (Renfrew and Bahn 1991:246). Emphasis is now placed not merely on the identification and quantification of animal species in a site, but on how the remains got there, what they can tell us about a wide range of questions such as subsistence, domestication, butchering and seasonality.

The archaeofauna at Steel's Pass received analysis primarily for species and distribution. Type of use, seasonality, and minimum number of individuals (MNI) did not receive systematic study; the investigator noted "high fragmentation" and "burning" of most bones, implying extensive cultural utilization (Davis 1993:42-48). Similar results were received on the Lower Whitetail Site (Greiser 1999).

Protein residue analysis and other avenues of faunal study are also available to the CRM researcher. The sample of ground-stone from Whitetail Creek (24JF1583) is just one example. Chipped stone tools and other cultural materials used for processing can also contain blood residue or protein for study.

PART III
DISCOVERING THE PAST: ARCHAEOLOGICAL INVESTIGATIONS AND CRM RESEARCH IN THE STUDY AREA

3.1 Inventories and Special Studies

Detailed archaeological research began fairly late in Montana as compared to elsewhere in the United States (McLeod and Melton 1986:IV-1). Prior to 1950, very few reports were written which addressed the east side of the Continental Divide. Minimal Works Project research during the 1930's was first on the scene; major river basin studies provided the next wave of information around 1950. Then, academic and university-oriented work, avocational archaeologists, and contract archaeology added to the documentation. Interspersed between the 1960's and 1990's were federal agency reports, including special archaeological projects, overviews, NHPA Section 106 and 110 compliance and State sponsored work.

3.1.1 Regional and Peripheral Studies: Defining the "Prehistoric Context"

The prehistoric context and chronology for the Whitetail Pipestone outlined in Part IV of this document is based largely upon findings and publications of regional authors. I rely heavily on eleven authors and editors in eight sources for the background information on the study area. Authors and researchers from other environmental disciplines have also provided invaluable material. For a more in-depth review of on any of the topics, I suggest consulting one of the sources listed below or in the reference section (Part VII). Undoubtedly other researchers will follow, too, with new and exciting information as the millennia unfolds. The bibliography below provides a guide of the materials that I found most helpful in developing the Whitetail Pipestone prehistoric context. The sources are listed first in alphabetical order, as is customary for a bibliography; then, I have included a short chronological narrative that annotates or summarizes each work. In the cultural review which follows (Part IV), I have used these sources to illustrate the regional culture history and provide the context for interpreting sites within the Whitetail Pipestone research area. I feel that a narrative organized in this manner best illustrates the development of information, over time, for the study area.

Selected Sources:

Deaver, Sherri and Ken Deaver
1986 *An Archaeological Overview of Butte District Prehistory.* (Leslie B. Davis Vol. Ed.) Cultural Resource Series No. 2. Bureau of Land Management, Montana State Office, Billings.

Davis, Leslie B. Ph.D..
1993 *An Archaeological Appraisal of Steel's Pass Campsite (24MA565) Prehistory: The 1992 Phase I Investigations.* Museum of the Rockies, Montana State University. Bozeman.

Foor, Thomas A.
1994 Southwestern Montana Prehistoric Sites: DRAFT Overview and Management Plan. Department of Anthropology, University of Montana. Missoula.

Frison, George
1991 *Prehistoric Hunters of the High Plains.* (2nd ed). Academic Press. San Diego, CA.

Frison and Mainfort (eds)
1996 *Archeological and Bioarchaeological Resources of the Northern Plains.* Tri-Services Cultural Resources Research Center USACERL Special Report 97/2. Arkansas Archeological Survey Research Series No. 47. Fayette Ville, Arkansas.

Greiser, Sally
1984 Projectile Point Chronologies of Southwestern Montana. *Archaeology in Montana* 25(1):35-46.

Knight, George C.
1989 *Overview: Ecological and Cultural Prehistory of the Helena and Deerlodge National Forests Montana.* United States Department of Agriculture, Helena and Deerlodge National Forests. Helena and Butte, Montana.

McLeod, C. Milo and Douglas Melton
1986 The Prehistory of the Lolo and Bitterroot national Forests (An Overview) or "Making it in a Marginal Environment; the Past 10,000 Years!" United States Department of Agriculture. Lolo and Bitterroot National Forests. Missoula and Hamilton, Montana.

In 1984 Sally T. Greiser published an article on "Projectile Point Chronologies of Southwestern Montana" in *Archaeology in Montana.* Her work has become a common desk reference for many archaeologists and archaeology technicians in CRM and academics. Greiser's work relied on firsthand information from the Canyon Ferry and Limestone Hills sites, as well as a comprehensive look at other researchers' data. She provided illustrations of the projectile point changes through time, and regional variations, with an associated time scale and a discussion of trends.

During the year preceding their publication in 1986, Milo McLeod and Doug Melton researched and wrote the *Prehistory of the Lolo and Bitterroot National Forests.* Their work served as a prototype for many of the overviews which followed. As a sister

Forest to both the Bitterroot and the Lolo, the managers at the Beaverhead-Deerlodge NF find much of the neighboring Overview relevant to our work.

In 1989 George Knight compiled an *Overview: Cultural and Ecological Prehistory* for the Helena and Deerlodge National Forests. Similar to what is attempted in the current overview, Knight reviewed prior records and inventories for the two Forests and compiled the results of that study within the context of regional prehistory. He focused heavily on ecological attributes and the inferred (or documented) relationship to prehistoric cultures. Area managers refer to this 1989 document regularly as baseline information for inventory planning. Figures and information from Knight's overview are included below as background information.

Concurrent with the national forest studies, Sheri and Ken Deaver contracted with the BLM Butte District to produce a prehistoric "overview" for that management area (Deaver and Deaver 1986); the geographic regions of the BLM and Forest Service overlap. Deavers' research draws heavily on ethnographic work, for which Sheri is well-known; compilation and analysis of paleo-vegetation and wildlife resources is very thorough as are suggested avenues of future research and thoughtfulness regarding archaeological remains.

In 1991, George Frison added to and republished his earlier (1978) work *Prehistoric Hunters of the High Plains*. The book is used as an archaeological text at regional universities. The hands-on experience and insight of the author are drawn upon for experimentation and explanation of archaeological phenomena. An academic source that a lay-reader can also appreciate, the "prehistoric hunters" provides valuable information toward interpreting the aboriginal use in the study area. For the purposes of this paper, (and elsewhere in my work) I have adopted Frison's terminology of "Paleo, Archaic, and Prehistoric" Periods and subsequent "Phases" in describing the temporal aspects of cultural prehistory.

In 1991 and 1992, Dr. Leslie Davis of Montana State University worked with employees and volunteers of the Deerlodge National Forest in researching the Steel's Pass site in the Highland Mountains. Steel's Pass, also known as Hell's Canyon (24MA565) is a campsite similar in setting and available resources to the Whitetail Pipestone area. It is of particular interest because of its proximity, similarities, and findings regarding my current research. A final report, which incorporates an additional year of excavation and research at the Steel's Pass site, is due out soon. Dr. Davis is responsible for most of the obsidian hydration studies in Montana and has incorporated this information into the Steel's Pass work as well.

In 1994, Professor Tom Foor of the University of Montana worked with an inter-agency task force in Southwestern Montana to develop the "Southwestern Montana Pre-historic Overview and Management Plan." The document is in draft form, but on the Beaverhead-Deerlodge National Forest, we have already adopted the overall methods and evaluation strategy. Central to the Historic Preservation and Management Plan for the Whitetail Pipestone are ideas and influences gleaned from Foor's work.

In 1996, Frison and Mainfort edited an overview of the *Archaeological and Bio-archaeological Resources of the Northern Plains* as part of a Tri-Services Cultural Resources Research Center and Arkansas Archeological Survey Research Series (No. 47). The work is reminiscent of Frison's earlier research; it incorporates updated information and is well illustrated. The Whitetail Pipestone study area is on the western periphery of the Northern Plains, which is the main focus of the 1996 work.

3.1.2 Prior Identification of Prehistoric Cultural Sites *within* the Analysis Area

Cultural sites identified in the management unit are primarily the product of twenty-two years of land management inventories. Section 106 compliance-related work was conducted by the USFS, BLM, and cultural contractors; researchers and private individuals have also contributed to the identification of sites. A search of the electronic databases at the Montana SHPO listed all known sites and previous inventories for the entire Whitetail Pipestone area (Morris/SHPO ltr. 1/99). Data from the Cultural Resources Annotated Bibliography System (CRABS), and the Cultural Resources Information System (CRIS) were cross-referenced with National Forest data to make sure all available information was considered. There were very few discrepancies. That's good news for those of us engaged in Cultural Resource Management.

The following table is a chronological listing of investigators who have submitted field inventory or research records to the Montana State Historic Preservation Office (SHPO ltr 1999). Agency or research organization affiliations are added for those which are known.

After the table of investigators I have provided a narrative which lists background information (Knight 1989), agency field surveys, and the prehistoric sites in greater detail. For quick reference, each prehistoric site is marked with a circular "bullet" (•) as it is introduced. At the end of Section 3.1.2, site information is compiled, condensed and summarized in tabular form. The cultural sites are further discussed within the applicable context and chronological period in Part IV. Additional site interpretation and analysis can be found in Part V (Patterns of the Past) and Part VI (Synthesis and Summary).

Table 4. **Prior Cultural Resource Investigators for the Whitetail Pipestone analysis area**

Year	Investigator
1976	Alan Haun - USFS
1977	James Wilde - USFS
1978	Peter Steere - USFS;
	Alan Carmichael et. al. DOT;
1979	Peter Steere - USFS;
	Blaine Miller BLM;
	G. Alan Carmichael et. al.;
	Sara Scott - USFS - HNF;
1980	Peter Steere - USFS;
	Beth Willard - USFS;
	Blaine Miller BLM;
	B.J. Earle;
1981	Peter Steere - USFS;
	Barb Beck - USFS;
	John Taylor - BLM;
1982	Barb Beck - USFS;
	John Taylor - BLM;
1983	Barb Beck - USFS;
	John Taylor - BLM;
	Paul Anderson;
1984	Barb Beck - USFS;
1985	Barb Beck - USFS;
	John Taylor - BLM;
	Dori Passman - BLM;
1986	Barb Beck - USFS;
	John Taylor - BLM;
	Dori Passman - BLM;
	Connie Moore;
1987	Barb Beck - USFS;
	Milo McLeod - USFS;
	Lawrence Kingsbury;
	Rob Bonnichsen
1988	Barb Beck - USFS
	Betsy Follman - USFS
	Richard Periman - USFS;
	Larry Lahren ;
	Dori Passman - BLM;
	Gerald Clark;
1989	Richard Periman - USFS;
	Wanda Roche - USFS;
	Gerald Clark BLM;
	Daniel Jepson;
	GCM Services Inc.
1990	Richard Periman - USFS
	Wanda Roche - USFS
	Julia Jackman - USFS;
	Connie Moore;
	John Park - BLM;
	Keystone Environmental Services
	Daniel Jepson - Contractor;
1991	Janene Caywood - Contractor ;
	John Park - BLM;
1992	John Park - BLM;
	GCM Services - Contractor;
	Philip Pallister - Private;
1993	John A. Park - BLM;
1994	Robert Peterson - Contractor;
	Shelia McNee - BLM;
	Lynn Fredlund - Contractor;
	Bill Weatherly - BLM;
1995	Renee Johnson - BLM;
	GCM Services - Contractor;
	Shelia McNee BLM;
	Dori Passman - BLM;
	Dale Gray - Contractor
1996	Sandra Morris - USFS
	Morris and Leetz - USFS;
	Darrell Sanders - BLM;
	Shelia McNee - BLM;
	Bill Weatherly;
1997	Sandra Morris - USFS;
	Morris and Leetz - USFS;
	Mike Ryan - USFS;
	Darrell Sanders - BLM;
	1999 Sanders and Kuntz - BLM;
	John and Mavis Greer; Pvt;
1998	Morris and Leetz - USFS;
	Bill Weatherly - BLM;
	Ralph Nichols - Paleontological
	Beth Meyer - BLM;
1999	Sanders and Hoff - BLM;
	Sandra Morris - USFS
	Morris and Leetz - USFS;
2000	Sandra Morris - USFS;
	Morris and Merrell - USFS

A review of records verified that past inventories conducted by agencies were mostly in response to heritage laws; cultural contractors worked primarily for contemporary mining companies and for the Montana Abandoned Mines Reclamation

Bureau. The Montana Department of Transportation (DOT) surveyed for new highway project(s). While some of these inventories are peripheral or only partially overlap with the Whitetail Pipestone management unit, they were included in record review because of close proximity.

The following narrative is a running review of prehistoric sites recorded on *National Forest lands* during the 1976-1999 inventories; a cumulative overview of sites on adjacent BLM land is made from summaries in the 1997-1999 work. Again, I mention that while the focus of my work is prehistoric sites on *National Forest lands* other sites are discussed as applicable to develop context.

At the time of Knight's 1989 overview, forty-two prehistoric archaeological sites were known on the entire Deerlodge National Forest (p. 101). About half of these had been recorded during (NHPA Section 106) compliance surveys (p. 98). The recorded sites represented lithic scatters, stone circles, rockshelters with habitation fill or pictographs, hearths or roasting pits, stone cairns, a conical timbered lodge, a vision quest structure, and several other sites whose identities were more "problematic." Late Archaic and Late Prehistoric periods were well represented on the Deerlodge. The Middle Archaic and Paleoindian periods were deemed "questionable." In 1989, no prehistoric site on the Forest was formally evaluated for National Register eligibility (p. 101).

In speculating about why the Deerlodge had so few recorded sites, Knight reasoned that "...primarily because limited large scale (Section 110) surveys had been attempted and that Archaeologists have not tailored Section 106 commitments to spot check high probability areas in the vicinity." He saw survey methodology as designed for efficiency and mostly for minerals-related projects (p. 104), noting that minerals projects ordinarily take place in "previously disturbed mine sites." Seeking a more scientifically interesting explanation, Knight hypothesized that much of the landscape of the Deerlodge was glaciated and that post-glacial solifluction and mass-wasting may be a factor. This was quickly discounted (p. 104) and the low prehistoric presence at that time was believed due to survey bias.

From 1976 - 1989 five prehistoric sites were known to exist in the study area. Knight included a tabular compilation of all recorded prehistoric sites on the Helena and Deerlodge National Forests, their respective mountain ranges, site types and culture components (1989 Appendix E - p. 301). Eighteen of the 42 Deerlodge National Forest sites were in Jefferson County; twelve of those were listed in the Boulder Mountain range (24JF60, 24JF100, 24JF106, 24JF153, 24JF275, 24JF297, 24JF450, 24JF478, 24JF603, 24JF604, 24JF605, 24JF646). A review of the site records revealed that seven are

outside of the current analysis area, lying west of Basin, Bernice, or Elk Park (24JF153, 24JF275, 24JF297, 24JF450, 24JF478 and 24JF646) or north of Boulder (24JF106). One, within the boundaries of the Whitetail Pipestone was found to be historic (24JF60). The remaining four represent the extent of recorded prehistoric sites in the Whitetail Pipestone as of ten years ago (24JF100, 24JF603, 24JF604, 24JF605).

One piece of evidence that was not included in Knight's work and continually eluded researchers was uncovered during review for the current Whitetail Pipestone analysis. A 1978 record by Jewell Werner of Whitehall for the Lower Whitetail site 24JF253 adds a critical piece of evidence to the current study. This brings to five the number of prehistoric sites recorded in the management unit prior to 1990. The following list is a short summary of 1976-1989 records:

- **24JF100** is a lithic scatter near Spire Rock; The original 1976 record by Al Haun is similar to modern "site-leads." It is a hand-written page which gives only a general indication of site type and location. No map or other reference point is included. As part of the current analysis, all post-1978 information for the site was compiled, the site revisited, and the record updated (Morris 1999). It is interpreted as a "campsite" which includes an Archaic component. The site has been very disturbed over the years by road use.
- **24JF603** was reported by a local informant (J.S. Wulf) in ~1973. A single-page form (also no map), prepared by another individual (author unknown) identifies the site as a surface-collected, prehistoric, lithic scatter/campsite near the Caldwell Place spring. The Caldwell Place is a relatively large private inholding within the analysis area. This is the only site which was not revisited as part of the current analysis.
- **24JF604** is a pictograph panel on the boundary of the Caldwell Place and National Forest. The original site record was prepared similar to 24JF603. The pictograph is well-known because of it's close proximity and visibility from Road #173. The site was re-recorded in 1996 by researchers Mavis and John Greer. The panel contains geometric motifs in red pigment. 1998 monitoring by Forest Service personnel (Morris and Merrell 2000) found the site had been severely smoked-stained from a campfire built at the base.
- **24JF605** is the Whitetail Bear pictograph. This site, like the two listed above, was originally recorded in the 1970's. The "bear" (see Figure 23) is located in a sheltered overhang near Whitetail Creek. The red-ochre (and charcoal) painted panel is well preserved and has been visited frequently by rock art experts. This

record was updated in 1996 by the Greers and the site again monitored in 1998 by agency personnel (Morris and Merrell 2000). .

- **24JF253** is a prehistoric occupation known as the "Lower Whitetail." The site was excavated and collected during the 1970's. It was recorded by local rancher, Jewell Werner, in 1978. The record describes a 120 meter terrace, on both sides of the creek which revealed cultural material to 16"-17" deep. The collection included "some 150 projectile points, hideworking tools, knives, bone tools, Intermountain (sic) ceramics, drills, faunal remains, waste flakes" representing the Late Paleoindian period to the Late Prehistoric Period. The site was relocated, mapped and surface inventoried during 1998 Forest Service Passport in Time project work; records were updated records as a result of that work (Morris 2000).

At the time Knight completed the "prehistoric overview," no known specialized archaeological analysis or National Register eligibility determination had been completed for any prehistoric site on National Forest lands. We now know that by the late 1970's, pottery from 24JF253 had been sent to John Brumley for analysis (1/9/77 letter) and four obsidian projectile points had been sent away for then-new "hydration" dating (Werner/Davis correspondence 1973, 1978). The pottery was classified as: "a good example of Intermountain Ware" with a suggested age of "about 1300 A.D. to the early historic period" based on associated radio carbon dates for similar materials in Montana, Idaho, and Wyoming (Brumley personal correspondence 1/9/77). The four obsidian projectiles, which stylistically fall into the Duncan-Hanna-McKean Complex, yielded hydration dates ranging from 2972 years ago to 8160 years ago (Davis/Werner Reports 1973, 1978). The older date is considered "suspect," because the artifact was a surface find and differing environmental attributes were not factored into the analysis (Werner personal communication 1999). The three dates of 2972, 4670 and 5896 B.P. are presumed reliable.

During the years of 1990 to 1994, two prehistoric sites were located. One was recorded and a second was identified, but records not completed.

- **24JF961**, known as the "Halfway Creek Mine," was recorded by Julie Jackman and Richard Periman in 1993. The site includes a prehistoric component in the form of a pictograph. The red-pigment rock art is not readily discernible. During 1996, the site was visited by rock art researchers, John and Mavis Greer. They updated the pictograph record with additional data (Greer and Greer 1996). During Forest Service project survey in 1997, an Archaic projectile point was

discovered near one of the rock outcrops. An addendum was added to the site record with this new information (Morris and Leetz 1997).

- **24JF1583**, known as *the bison skull site* by its founder (later recorded as 24JF1583) is a prehistoric campsite located on Whitetail Creek. It was found during survey for a prescribed burn in 1994 (Leetz field notes). The survey was not formally reported; however, field records indicate the location of a bison skull an abundance of fire-cracked rock, and the recovery of a projectile point, projectile point base, unifacial tool and two ground stone implements from the site. The groundstone was sent to Paleo Research Laboratories for protein residue and pollen analysis by Forest Archaeologist Richard Periman (10/25/94 ltr). The Report provided inconclusive, but noteworthy results (Cummings and Puseman 1995) and is further discussed in Part 5.5 of the overview.

During 1995, one prehistoric site was recorded during inventory in advance of the Coyote Flats prescribed burn (Morris and Leetz 1995):

- **24JF995** is a small rock shelter, presumed to be a single episode or short term occupation as evidenced by minimal surface lithic debris of locally available basalt (or dacite); the site contains one projectile point, which typologically indicates Late Prehistoric Period use. The Coyote Flats survey also located two unrelated prehistoric "isolates" which were undiagnostic.

During 1996, two prehistoric sites and six pictographs were recorded. The sites were found in separate NHPA Section 106 inventories (Morris and Leetz 1996) and by researchers permitted to work on the National Forest (Greer and Greer 1997).

- **24JF1331** is a lithic scatter at an upland spring. It was found during the TeBay Allotment Burn inventory. The large dispersed scatter is believed to represent a chipping station or small industrial site and possible transient campsite (Morris and Leetz 1996). Locally available quartz crystal had been fashioned into bifaces. Primary and secondary flakes of a variety of materials made up most of the lithics on site. Utilization was noted on at least one piece. No subsurface testing was done.
- **24JF964** is a previously recorded hardrock mining site known as the Silver Queen Mine (Jackman and Leetz 1992). During 1996, the Forest Service implemented a program for abatement of safety hazards related to past mining activity. Deep open shafts at the Silver Queen were scheduled for closure. A survey to access the historic site and determine the extent of expected reclamation impacts revealed an additional concern: the site was found to have a prehistoric

component. New information was added to the site record (Morris and Leetz 1996). One crude scraper or bifacial blank was identified, as well as a few flakes. No temporally diagnostic artifacts or features were located. The site was extremely disturbed as a result of the mining activity and when evaluated for the National Register was found "not significant" by SHPO consensus (Morris/Wilmoth correspondence 1/14/97).

Greer's Rock Art Report for the 1996 field season was published in December of that year. The researchers visited numerous pictograph sites in Montana, especially concentrating work in the Jefferson Valley while on the Beaverhead-Deerlodge National Forest. The Greer's updated forms for three previously recorded pictographs (See 24JF604, 24JF605 and 24JF961 above) and recorded seven new cultural sites in the Whitetail Pipestone area (24JF1319-24JF1325). Six of Greer's newly recorded sites are pictographs; the seventh is a wickiup/pole lean-to against boulders, which may not meet prehistoric criteria (24JF1325). The sites were revisited and photographed during a 1998 Passport in Time project on the National Forest (Morris and Merrell 2000)

- **24JF1319** - The Double Boulder Pictographs are located east of the Lower Whitetail site; The pictograph is comprised of red ochre painted on granite boulders. Eighteen motifs are recorded, including bear paws, smears and a complex anthropomorphic design; the south-facing boulder is spalling badly.
- **24JF1320** - The Xmas Tree Pictographs are located not far north of the Lower Whitetail site (24JF253). The small, low panel consists of red ochre painted on a south-facing granite boulder. Only finger lines and smears are discernible; the granite is spalling badly.
- **24JF1321** - The Pinacle Rock Pictographs are located immediately north of Lower Whitetail site; similar to others in the group, this panel is red ochre painted on a granite boulder backdrop. The panel faces west. Pictographs are low on a tall boulder. Designs include mostly smears, with two possible anthropomorphs. The boulder is spalling, but has perhaps a little more shelter than some others in the area.
- **24JF1322** - The West Bank Pictographs are located near the edge of a prehistoric campsite on a low terrace on the west side of Whitetail Creek. This pictograph encompasses two large panels on a granite boulder backdrop. The painting, some ten-plus in all, are made with red paint in a series of fingerlines and dots; other figures are present, but less interpretable. In 1996, the Greer's recorded a buffalo skull motif; In 1998, during Forest Service project work, researcher Carolynne

Merrell questioned the "skull" motif interpretation (Morris and Merrell 2000). The site is weathering and in 'fair' condition.

- **24JF1323** -The Tombstone Boulder Pictographs are displayed on an upland, dry, open site; Red ochre paintings on a large boulder can be seen from the Whitetail road. The motifs include circles, resembling targets, a bear's paw and unidentifiable smears. The stone is spalling in a fashion that appears as vandalism, but is not. Pictographs face southwest. The site is in fair condition.
- **24JF1324** - The Fallen Slab pictographs are also located on the Whitetail road. A single red circle was noted at this site. Like all other granite boulders, this too is exfoliating. The pictograph faces southwest. Further research was recommended by the recorders; the site was found in the evening, and darkness prevented further investigation.

Four of the pictographs cluster in the area of the previously recorded "Whitetail Bear" (24JF605). All rock art paintings are red pigment applied to granite boulders. The Greer's feel that each rock art site or cave site in close proximity to each other "should have separate (Smithsonian) numbers to allow for explicit reference to each...and more efficient and organized handling of archival materials from site recording, including paperwork and collected samples or artifacts. If future studies indicate relations between all or some of these...sites, such relations can be dealt with better between discrete sites than within a large conglomerate site complex" (Greer and Greer 1996:15). This explains the cluster of sites in a small area.

In 1997, eight new prehistoric sites were identified in Forest Service cultural inventories in the Whitetail Pipestone area (24JF1545, 24JF1549, 24JF1546, 24JF1544, 24JF1547, 24JF1539, 24JF1543, 24JF1639); additional information was added to a ninth site (24JF961). Inventory consisted of project surveys by agency personnel mainly for recreation and prescribed burn proposals (Morris and Leetz 1997). Seven new site records were prepared (24JF1539, 24JF1543-24JF1547, 24JF1549); one previously recorded historic mine and pictograph site was updated to add a prehistoric occupation (24JF961); one site on a private land inholding (24JF1639) was identified, but not formally documented until 1999.

The first Whitetail Pipestone inventory in 1997 which identified prehistoric sites was for the "Tail-Pipe Motorcycle Race" (also see 3.1.3 below). This survey reported six prehistoric sites (24JF961, 24JF1544-24JF1547, 24JF1639) and three isolated artifacts. Five sites were new; the sixth was an additional prehistoric component at the historic Halfway Creek Mine (24JF961) (also see 1994 above):

- **24JF1544** - A lithic Scatter and quartz crystal chipping station is located on a low terrace near Halfway Creek. The site consists of a dense concentration of waste flakes with some associated fire-cracked-rock and charcoal. The lithic material is almost solely clear and smoky quartz. One crystal tool was noted. The site appears to be quite small; it is eroding out of a historic road near the old creek cut, but may be mostly intact. Cultural materials were visible to a depth of about 8"; the site warrants further investigation.
- **24JF1545** - A lithic Scatter near "suicide cabin" is manifest by a light, and dispersed scattering of flakes. The lithic material is mostly chert. No hearths or other features were found; no functional or temporal diagnostics were located. The site has been disturbed by ATV trail(s), historic prospecting, an old road to "suicide cabin" and cattle use.
- **24JF1546** - A prehistoric campsite with multiple loci is found along Halfway Creek. The site is located on a narrow, gentle slope, and is actively eroding downward. The site is made up of small concentrations of lithic debris and fire cracked rock. Lithic materials are varied and include a relatively large percentage of obsidian. Projectile points indicate Archaic Period use. Scrapers and partial tools indicate food and/or hide preparation and subsistence activity. The site is very disturbed, with the exception of one loci (on a small knoll). It is criss-crossed by the access road, and a historic road, which is now used as an ATV trail, and erosion from a small side drainage. In addition, the area to the south of the site appears to have been used as a borrow source for fill, perhaps historically. A roadside parking area and fenced exclosure also encompass portions of the site.
- **24JF1547** - A historic stone oven and old log bridge along Halfway Creek probably were constructed by railroad workers as they built a ditch to run water from Halfway creek toward the Spire Rock Railroad viaduct. The historic features are interspersed with a prehistoric component. The prehistoric manifestation includes a moderate density, but geographically small scattering of lithic materials on an alluvial fan at the creek confluence. Lithic material is varied and includes chert, crystal and obsidian flakes and utilized flakes. No formal tools were noted. Fire-cracked-rock is present, but features may be hard to distinguish, because of the nature of the historic component. An isolated projectile point, of Archaic Period style, was found downstream from this site about an eighth of a mile.
- **24JF1639** is a lithic scatter on upper Beefstraight Creek; it is on private land, in an old road bed which is now used as an ATV trail. It consists of a scattering of

lithics and burned soils eroding from the old road near the downslope edge of the alluvial fan/terrace. A variety of lithic materials were noted. No diagnostic tools or temporal indicators were located. A site record was prepared in 1999 as part of "site-lead" follow-up for the Whitetail Pipestone analysis (Morris 1999).

The Tail-Pipe trail inventory found that almost all of the prehistoric sites identified are being actively eroded; some sites were being impacted by contemporary uses, particularly motorized recreation and road maintenance.

Another 1997 inventory in advance of the North Fork/Elder Creek Prescribed Burn at the north end of the Whitetail Pipestone management area targeted 4500 acres. Twelve cultural sites, including two prehistoric sites were encountered (24JF1539 and 24JF1543). Also during this survey, four isolated prehistoric artifacts were reported. These included two projectile points and two flakes. The projectile points indicate an Archaic morphology.

- **24JF1539** is a lithic scatter around an upland spring/seep in Watson Gulch. This site contained numerous materials and debris from lithic reduction, but no obvious features or temporal indicators. No impacts were noted at this site.
- **24JF1543** is an open air campsite eroding from the Forest Service road on Elder Creek. It contains at least one hearth feature with associated bone fragments and a number of lithic concentration areas, but so far, no temporal diagnostics. The recorders found it being impacted by "road maintenance and modern recreational activities" (Morris and Leetz 1997).

During early 1998, Obsidian source analysis was conducted at Geochemical Research Laboratory on 22 artifact specimens from North Zone Beaverhead-Deerlodge National Forest (Hughes 3/12/98). Eleven of these came from within the study area: Three from site 24JF1546, four from 24JF1589, and one each from sites 24JF1583 and 24JF1331, plus two isolated projectile points. When selecting artifacts for sourcing, we chose those which could also serve as temporal indicators, if possible. By this method, we sought to identify a preferred quarry, or to infer trade or travel routes for various time periods. Hughes' results indicate that eight of the eleven obsidian artifacts collected at Whitetail Pipestone sites were of Bear Gulch material; three sourced to Obsidian Cliff. A cursory tally of stylistic attributes and corresponding source materials indicates that six of the samples are stylistically representative projectile points. Of the six, five are classified as McKean Complex variants (e.g. Duncan, Hanna). One small obsidian point broken at the notch was classified as Late Period. The source material for the Archaic points was split between the two sources, with two points attributable to Obsidian Cliff and three to

Bear Gulch. Source material for the Late Period point came from Bear Gulch. (Also see Table 9: Section 5.2.1) Both Obsidian Cliff, Wyoming and Bear Gulch, Idaho are about equi-distant from the study area at approximately 150 miles. The Obsidian Cliff source has recently undergone extensive investigation and was given National Historic Landmark status (Davis et al. 1995).

3.1.3 Inventory in Support of the Current Analysis

In the past two-plus years (1997 -1999), four Forest Service surveys in the analysis area are especially noteworthy. Two surveys were in response to recreation special use permit applications which indirectly identified the need for the Whitetail Pipestone travel plan analysis (Morris and Leetz 1997, 1998); two others were designed to gather information in a more comprehensive way and fill in informational gaps for the analysis (Morris 1999, 2000). New developments at site 24JF253 were also made as a direct result of the current study. Two BLM inventories were conducted in support of the current travel plan analysis; these provided an overview of all prior, area-related BLM work, and are included in the discussion below for context:

In 1997 the Forest Service and the BLM received an application for a Special Use permit for a group-sponsored *motorcycle race*; the identified route covered existing trails across both agency management areas in the Whitetail Pipestone. Most of the trails the group hoped to use were non-system, user-created trails. Managers soon became aware of just how numerous the user-created trails were and of the increasing interests in motorized sports in the area. Forest Service and BLM archaeologists inventoried the trail route, known as the "tail-pipe" project area, as part of the NHPA Section 106 review (Morris and Leetz 1997; Sanders and Kuntz 1997). On the Forest Service area alone, seven new sites were recorded during this survey for a total of 13 associated cultural sites. Four of the 13 were prehistoric; two have mixed historic and prehistoric components and features (multicomponent), and seven were solely historic in nature. Three of the isolated finds were prehistoric artifacts, including two projectile points and one piece of obsidian debitage. (See 1997 inventory discussion in Section 3.1.2 above for details of recorded sites).

Concurrently with the FS inventory for the race, the BLM also surveyed trails crossing their jurisdiction (Sanders and Kuntz 1997). They too encountered a higher than expected density of cultural sites. The result of this inventory was a heightened awareness of the number of prehistoric sites in the area and the number of non-system trails and motorized impacts which threatened cultural sites. The motorcycle race permit was ultimately denied. Managers realized that new issues in travel management and motorized

recreation use in the Whitetail Pipestone area were surfacing, and that the area did not meet Forest Plan standards for recreation management. As a result, the Whitetail Pipestone Environmental Analysis (WP EA) was initiated.

During 1998, thirteen additional prehistoric sites were identified in the study area. In addition, most known sites were visited, monitored for impacts and site records updated. It was during this time that another motorized recreation group submitted an application for an *ATV "Fun Run"* in the Whitetail Pipestone. Having the background of the previous year, managers steered the group to use "system" trails and roads and away from the 1997 route, which yielded so many sites. Still, some of the trails the group wished to ride were "non-system"; many of the existing system roads and trails (often called t-roads, because the two-track roads resemble two parallel trails) had never been inventoried. Based on the higher-than-expected density of sites resulting from the prior year trail survey, archaeologists believed survey of the proposed route was warranted, even in areas where the road had been used and maintained for many years (Morris and Leetz 1998). Managers, in conjunction with the trail-riders group actively sought to avoid areas where the likelihood of sites was high; still, the inventory yielded 27 sites. Eleven of these had been previously recorded. Twenty-three sites were from the historic era. Four were prehistoric; two of the prehistoric sites were newly recorded as part of the inventory (24JF1579, 24JF1580).

- **24JF1579** is a moderately-sized terrace campsite on Big Pipestone Creek. It bears evidence of hide processing or working and other domestic activities and temporal indications of the Archaic Period. A historic placer camp overlies the prehistoric component, but does not appear to have severely impacted it. A old wagon road, bladed deeply through the northwest edge of the site during the early 1900's has caused the greatest damage.
- **24JF1580** is a small rockshelter pictograph about 1/8 mile up the small drainage from the 24JF1579 campsite. Heavy duff in the shelter obscured ground surface inspection. Historic use was also in evidence near the shelter.

Because the group-sponsored "fun run" had identified alternate routes in order to avoid resource concerns, managers were able to effectively avoid the prehistoric sites potentially threatened by heavy ATV use. As a result of this inventory, historic roads that overlapped with prehistoric sites were again identified; archaeologists and managers gained new insight into the kind and nature of impacts which might occur from motorized vehicle use. The erosive nature of the area soils (decomposed granite) caused special concern, since any new disturbance would open the soils to gullying and erosion. The

results were two-fold: The Forest Supervisor and Area Manager issued an "emergency closure" for off-road motorized use in a large portion of the National Forest and BLM lands in the Whitetail Management area because of identified resource concerns; the in-progress environmental analysis (EA) was elevated to the level of an Environmental Impact Statement (EIS).

During 1998 and 1999 Additional reconnaissance and a "site-lead" follow-up added seven new prehistoric sites to the record. (Morris1999). To gain greater insight into the cultural attributes of the Whitetail Pipestone area for the upcoming EIS, the reconnaissance was designed to include trails, roads, and areas of high site probability. The BLM did the same, and inventoried nearly all their holdings in the management area (see discussion below). The Forest Service, with land areas approximately ten times greater was able to accumulate about 6% survey, with a higher percentage on roads and trails (over 10%). During the 1998 Forest Service reconnaissance, five additional prehistoric sites were recorded (24JF1584-24JF241588). On a return data-gathering trip early in 1999, an additional site was located (24JF1593). During the summer of 1999, while inventorying a historic granite quarry, a prehistoric component was located (24JF1640); the current reconnaissance was expanded to include this site. This addition brings to seven, the number of new prehistoric sites located during the reconnaissance effort:

- **24JF1585** - The First Hartman Creek Site is a sloping terrace campsite along the southeast side of the creek. Tools, lithic debris and fire cracked rock are visible on the site surface and in the road which crosses the site. A single projectile point indicates Late Period use; lithic tools representative of hide working and food preparation are present.
- **24JF1586** - The Second Hartman Creek Site is located on a high bench across the creek and upstream from the "first." One hearth concentration and a variety of lithics are present. A single late period projectile point was found. This site is actively eroding into the drainage; though no noticeable disturbance factors were identified.
- **24JF1587** - Lindsey's Site is a concentrated campsite located on a small alluvial fan above Hartman Creek. The site consists of a variety of tools, lithics, fire-cracked rock features and some bone. Numerous lithic materials are present, including locally available clear and smoky quartz. Noteworthy artifacts include three Archaic Period projectile points, broken scrapers and utilized flakes and a possible graver or awl. An old road cuts deeply through the site, the area on either side, however, remains fairly intact.

- **24JF1589** - The upper Hartman Campsite is across the creek from the Silver Queen Mine (24JF964). The prehistoric site is appears to parallel to the west side of the creek. It is evidenced mainly in the two-track road that follows the drainage. Similar to site 24JF1546 along Halfway Creek, this site displays multiple loci; interpreting the loci is problematic; they may represent one large site with areas which have been eroded away, or perhaps different occupation periods, or perhaps different activities or groups within the same occupation. Further work is warranted. The site is made up of small concentrations of lithic debris and fire cracked rock. Lithic materials are varied and include a relatively large percentage of obsidian. Projectile points indicate Archaic Period use. Scrapers and partial tools may represent food and/or hide preparation and subsistence activity.
- **24JF1584** - The Crystal Pits Quarry can be found along the main Delmoe-Pipestone road on an upland bench. Modern crystal digging pits have exposed a prehistoric component. Areas of culturally modified quartz crystal flakes and three bifaces of non-native material were found. The bifaces include a complete Late Period projectile point, one blank or possible preform and the mid-section of a large knife or point.
- **24JF1588** - The Crystal Spring Quarry is very similar to 24JF1584, but has received less disturbance by modern crystal prospectors. This small procurement site is about a mile upstream from the "pits" along the main road. No patterned artifacts were located at this site, however, concentrations of cultural flakes and deflated cores are obvious on the ground surface. A small wet area, perhaps a spring or seep is central to the site. Erosion from this small drainage has created the alluvial fan where 24JF1587 is located, about 1/4 mile away.
- **24JF1593** - Ali's Site is also located on Hartman Creek, upstream and upslope from 24JF1587. The site is made up of a light scattering of lithics, primarily tools and functionally identifiable remains. Waste flakes are less common. No features were found. A complete, hafted knife, strikingly similar to the Cody knife illustrated by Frison (1996:15) may indicate Late-Paleo/Early Archaic use. The site is located on a slope and disturbed by downslope sheet erosion and an old, but currently used road which crosses it.
- **24JF1640** - The Homestake Prehistoric site was noted at the far south edge of a historic granite quarry. The prehistoric site is eroding from the intersection of ATV trails (which were formerly quarry haul roads). The site is made up of a

relatively light and dispersed lithic scatter. No features or formal tools were identified. The area has been severely disturbed by historic activities; there may be isolated remains of the site on a small sloping fan, where less disturbance has occurred.

Two cultural sites with the oldest records, which had not been updated (24JF100, 24JF843) were identified as priority sites for relocation and monitoring; these sites were revisited and records updated as part of the 1998 field work (Morris 1999, Morris and Merrell 2000) (Also see 24JF100 above). As part of the site-lead follow-up, the record for a lithic scatter identified on a private inholding in 1997 was finalized (24JF1639). In this manner, all *known* prehistoric sites on National Forest lands within the analysis area had current (within five years) documentation. Four isolated projectile points, found at different locations on Spire Rock Flats during the survey, added new evidence for a "hunting ground" hypothesis. Because the survey concentrated on existing trails and roads, all of the sites and isolated artifacts were located in disturbed areas.

- **24JF100** (updated) is the Spire Rock lithic scatter which was recorded in 1976 by Forest Service surveyor Alan Haun (See 1976-1990 in 3.1.2 above). The original record listed the site on the west side of Hartman Creek. Current inventory expanded the boundaries to include lithic concentrations on both sides of the creek. A few fire cracked rocks are exposed in the road-cut. Lithics and artifacts are sparsely scattered, and include a variety of materials. One projectile point indicates late Archaic Period use; a large utilized flake may indicate subsistence activities. The site is quite disturbed with roads and creek-side erosion.
- **24JF843** is a lithic scatter which was recorded in 1986 by BLM archaeologist John Taylor. It is a small campsite found in the Dry Creek area west of Ringing Rocks. Fire cracked rocks are in evidence, but no functionally or temporally diagnostic materials were recorded. 24JF843 is also bisected by a primitive road and, like other sites located in travelways, it is experiencing erosion. The site also contains a historic component in the form of a stone building and corral; it lies near the boundary of Forest Service and BLM managed lands. The original record was overlooked during research for the Forest cultural overview (Knight 1989); it was not identified during initial research for the current study until, like 24JF253, it showed up in the file search with State records.

Sites recorded or updated during the reconnaissance and monitoring, with the exception of two (24JF843, 24JF1640) are in close proximity to Hartman Creek, Spire Rock and Spire Rock Flats. Sites in this vicinity represent small campsites or workshops along

the small ephemeral creek which may be associated with the two crystal quarrying areas. No subsurface inspection was done; however, disturbed areas (roads, trails and cutbanks) contained exposed features and artifacts to support the campsite and workshop interpretation. Projectile points or point fragments indicate evidence of intermittent, and perhaps repeated seasonal use from possibly the Late Paleo through the Late Prehistoric Periods. Because of the close proximity and diversity of prehistoric sites in this vicinity, it is being considered for designation as an archaeological district. Further research is warranted, since sites are disturbed by historic and modern roads and trails and sheet erosion; this disturbance is compounded by steep slopes, unstable soils and livestock and wildlife use making integrity questionable. (Also see "site condition" in Part 5.7.3).

Forest Service Archaeologists scheduled a *"Passport in Time"* (PIT) project to provide additional 1998 inventory coverage. PIT is a nationwide program, where volunteers work with professional archaeologists to accomplish heritage goals. The project, titled "Exploring the Trail to the Buffalo" was named for the location of a buffalo skull at one of the nearby sites and from ethnographic reference to yearly expeditions by the Flatheads in search of bison (Beck 1988:29). Seven volunteers signed up to donate a week of their time to provide surface coverage. Additional volunteers from within the agency, as well as two full-time agency archaeologists made up the remainder of the crew. They accomplished four hundred (400) person-hours (50 person-days) of inventory and site recording during the week of August 20-24, 1998 (Morris 2000). Five prehistoric sites were located and recorded (24JF1581, 24JF1582, 24JF1583, 24JF1590, 24JF253). Archaeologists had prior knowledge of one of these sites (24JF1583), but it had not yet been formally recorded. Another, (24JF253), was yet to be uncovered in record search. Newly recorded were:

- **24JF1581** - The Monolith Pictograph was added to the cluster of pictograph sites in the vicinity of the Whitetail Bear (24JF605). This site consists of finger lines and rake-like figures painted in red pigment on a south-facing granite boulder. It is situated on the east side of the Lower Whitetail campsite (24JF253). The pigment is fading.
- **24JF1582** - The Upper Buffalo Skull campsite was identified while defining the boundaries for the nearby site (24JF1583). The two are about 1/3 mile apart at creek confluences. The upper site consists of a scattering of lithics and a few formal tools. Lithic materials are varied; chert is heavily represented. No temporally diagnostic artifacts were found. Scrapers and utilized flakes indicate food or hide processing. No features were evident. The site may be mostly

buried. Overburden and vegetation are both heavy. The site has not been disturbed.

- **24JF1590** - The small site at Grouse Creek, near a rock-shelter-like cave consists of a relatively undisturbed lithic scatter; it is probably a small campsite. Formal tools are well represented; lithic density is very light. Noted were an awl, two projectile point fragments and a blank. The points indicate Archaic Period use. A natural shelter is located near the site. Further research is recommended. The site has not been disturbed.

Also during the PIT project, six pictographs which cluster in the Whitetail area were monitored for impacts (24JF604, 24JF605, 24JF1319, 24JF1320, 24JF1321, 24JF1322); additional information was gathered by professional rock art photographer, Carolynne Merrell, for updated site records (Morris and Merrell 2000). Two sites identified earlier in 1998, during the MTA survey (24JF1579, 24JF1580) were also revisited and records finalized. Four historic sites were encountered. The inventory included areas which were both accessible by trails, and country which was not. As a result, three of the newly recorded prehistoric sites were located in areas which are undisturbed (24JF1582, 24JF1583, 24JF1590). Prehistoric sites recorded during the PIT project included campsites or occupational areas and pictographs. We were able to recommend one, ~ 30-acre area along Whitetail Creek as a "prehistoric district." Within the proposed district are six pictograph panels surrounding a large, multicomponent campsite. The campsite indicates periods of use from the Early Archaic (and perhaps earlier) to the Late Prehistoric. The rock art consists of red (ochre) paint applied on granite boulders. Most of the pictographs were recorded in 1996 by the Greers (Greer and Greer 1996). The additional "monolith" panel (24JF1581), and photographic recording of *all* pictograph sites during the PIT project by Carolynne Merrell promises new insight into this area. The site disturbance assessment and monitoring undertaken during PIT, indicated that most archaeology sites were experiencing erosion, especially if the topography included any slope, or if they were associated with a road or trail alignment, stock congregation or other disturbance area. Pictographs, aside from exfoliating because of weathering, were fairing quite well. The exception was 24JF604, which had recently been smoke-stained by recreationists who had (probably unknowingly) built a campfire at the base of the pictograph panel.

In early 1999, after locating the site during PIT, we found that site 24JF253 had previously been recorded (Werner 1978). The record led us to a local avocational archaeologist who had excavated at the site during the 1970's. An initial contact with Mr.

Jewell Werner of Whitehall, who recorded the site, confirmed the information and revealed a collection of artifacts, faunal remains, and pottery. Mr. Werner shared his field notes, research materials, and artifacts. A second contact with Mr. Ken Hurley of Butte, who also worked at the site, has not been completed. Artifact and pottery data from the "Werner Collection" is included in the Whitetail Pipestone prehistoric overview; faunal analysis, conducted by Weber Greiser of Historical Research Associates in Missoula has recently been completed, and is also included. A comprehensive site write-up, in cooperation with Mr. Werner is planned. The 24JF253 collection consists of projectile points and stone tools which stylistically represent the Late Paleo Period through the Late Prehistoric; it also includes bone tools, pottery, ochre and a possible "stone anvil." Agency archaeologists revisited the site with Mr. Werner during the summer of 1999 to identify previously "disturbed" areas and locational reference points to interpret previous work. Additional site work included the excavation of a one-meter test unit in a presumably undisturbed area near the center of the occupational terrace to determine if stratified deposits remain. The testing was inconclusive (report in progress). Cultural materials in the unit were very sparse and soil stratigraphy nearly homogenous. Sterile soils were reached at 25 cm. Testing was conducted during mid-July 1999; soils were very compacted and very dry. The objective of the testing was to obtain "comparative" or "control" stratigraphy with which to interpret prior information. A deeper unit is probably warranted. Perhaps the downslope soil movement and concentrated livestock use has buried the site more deeply than anticipated in the 25 years since initial recordation.

During 1997 and 1998 the Bureau of Land Management completed two inventories in anticipation of the interagency environmental review (Sanders and Kuntz 1997). The work concentrated on both historic and prehistoric resources, with an emphasis on the earlier period and the identification of impacts occurring to previously recorded sites. A cumulation of prior and new information in this report lists 34 prehistoric sites or historic sites with a prehistoric component on BLM land and two on adjacent private land. Eleven of these were recorded during the 1997 field work. Prehistoric properties indicate use for quarrying and stone tool production as well as bison procurement and butchering. Rock art and stone tool caches, and other evidence in the form of "lithic scatters" is on record. Temporal attributes range from early Paleoindian (Clovis) to the Late Prehistoric period. The majority of the sites were located in or proximate to roads or trails or other disturbance areas (e.g. subsequent occupation) and were experiencing impacts. Most prehistoric sites have not had National Register evaluations and many are considered eligible.

1998 work by the BLM identified four new prehistoric sites; one containing attributes indicative of a Traditional Cultural Property (Hoff and Sanders 1999). A fifth site, "of obvious recent construction...may also qualify as a Traditional Cultural Property." Two previously recorded prehistoric sites, both quarrying areas (24JF1347 and 24JF1348) were revisited and site boundaries expanded or updated. Other newly documented properties of a prehistoric nature include a lithic scatter, tipi circle and chert cache. Most sites are considered eligible until proven to contain no subsurface deposits or other qualifying characteristics. Site 24JF1348, previously recorded as a "basalt quarrying area" had some interesting new developments. Recent research in Madison County (Baumler et. al. 1999) indicates that the extremely fine-grained basalt in the various loci of 24JF1348 is actually "dacite." BLM anticipates additional research on the quarries in cooperation with the Montana Archaeology Society in the future. None of the newly recorded prehistoric sites were listed as being currently impacted.

3.2 CRM Summary of Prehistoric Sites

3.2.1 Smithsonian Designation, Curation Repositories and Site Location

Each recorded site is designated with a Smithsonian trinomial number (e.g. 24JF123) obtained from the Montana Archaeological Records Office at the University of Montana. Designations are unique, and used for scientific tracking purposes. The trinomial indicates State (MT = 24), County (Jefferson = JF), and sequential number of recorded cultural site within the county (123) for each record. Original site documentation is on file with Arch. Records. As sites are monitored or records updated, the material is also filed with the records department. Through the years, standards for the recording of site information have not been consistent; they continue to evolve and become more complex (Discussion in detail - Part V).

The University of Montana has been the primary curation facility used by the Beaverhead-Deerlodge National Forest for artifacts and information resulting from site investigation. Research materials from the Hell's Canyon site (24MA565) are currently at the Museum of the Rockies for analysis. Artifacts from on-going research are kept in the Forest Service Heritage Program laboratory and archives in Butte. These materials represent pieces of the "public heritage," and must be available for scientific research and historic interpretation (USDI 1989:38). The Archaeological Resource Protection Act (ARPA) of 1979 also seeks to foster information exchange between federal agencies and "private individuals having collections of archaeological resources and data....obtained (from federal lands) before....the enactment of the Act" (USDI 1989:43).

By the same token, ARPA has also designated the location and nature of cultural sites on public land as "confidential" information, to be withheld from public disclosure (USDI 1989:42). This protection is aimed primarily at keeping the information out of the hands of looters. Consequently, site-specific locations have been reserved from versions of this overview, which might be accessible from the library system.

3.2.2. National Register of Historic Places Status

Many, if not most, of the prehistoric sites in the management area have not undergone formal National Register eligibility evaluation. The National Register of Historic Places (NRHP) has four criterion for eligibility or significance. In addition, the site must also retain the integrity to convey its significance (USDI 1991). In the *Southwest Montana Prehistoric Overview* (Foor 1994), specific site attributes which might illustrate this integrity are outlined. National Register Bulletin (NRB) 15 indicates that most archaeological sites are eligible under Criterion D, which is the potential to produce important scientific information. As each new site is recorded, the recorder may make recommendations as to whether or not the site meets NRHP criterion. Often these recommendations are very preliminary or "intuitive." A formal NRHP determination is obtained only after review and agreement with the Montana State Historic Preservation Officer (SHPO). The formal evaluation is often undertaken only when the site is at risk from a proposed undertaking. The National Historic Preservation Act, Section 110, requires that federal agencies inventory their lands and establish a program to protect and nominate to the National Register, those properties which qualify (USDI 1989:16). There are 37 prehistoric sites on National Forest lands or on privately held in-holdings within National Forest boundaries. None of these sites have been *formally* determined eligible for the National Register; 31 sites are recommended, presumed or otherwise assumed as eligible. Assumption is often based on need to conduct additional research or subsurface testing. Four sites have no statement regarding National Register eligibility, or are intentionally unevaluated. One site is recommended as not eligible due to loss of integrity. One site has been formally determined not eligible due to loss of integrity.

The following table summarizes the CRM status of recorded prehistoric sites within National Forest boundaries of the Whitetail Pipestone management unit. Included in the table is the trinomial Smithsonian designation, the legal location in State Plane Coordinates (Forest Service version only) and a statement of National Register recommendations or findings. The map (Figure 4), which follows the table, illustrates the relative locations of sites and site clusters (also withheld from public disclosure).

Table 5.

Recorded Prehistoric Sites on Beaverhead-Deerlodge National Forest lands in the Whitetail Pipestone Management Unit

SITE NUMBER	SITE NAME	LEGAL LOCATION	DESCRIPTION and National Register Status
24JF100	Hartman-Spire Rock	**Confidential - Not For Public Disclosure**	Part of a multiple site archaeological district; campsite containing an Archaic component. The site is presumed eligible for the NR under Criterion D.
24JF253	Lower Whitetail		Stratified habitation site which has yielded hundreds of stone tools, some bone tools, Intermountain ceramic, faunal remains, and waste flakes; projectile points indicate Late Period, Archaic and possible Paleo use. Research is continuing. The habitation site is central to a complex of pictograph sites in close proximity. Presumed eligible for the NR under Criterion D, and possibly A.
24JF603	Lower Whitetail #1		Prehistoric site; surface collected of artifacts which indicate food or hide processing activities and projectile points in the vicinity of a perennial spring; old site form/no map; pvt ownership - NF inholding - Unknown status; not monitored.
24JF604 (24JF1020)	Caldwell Pictographs		Prehistoric Rock Art; numerous motifs including circles and fingerlines; recommended eligible; on boundary of FS & pvt ownership;
24JF605 (24JF1020)	Whitetail Bear Pictograph		Prehistoric Rock Art; Grizzly Bear with child-sized handprints and mountain sheep motifs; consider eligible under Criterion C and possibly A;
24JF843	Dry Creek Multi-component		Prehistoric; scattered distribution of hearths and artifacts, with nearby basalt/dacite source; considered eligible under Criterion D; Historic component consists of stone building and corral adjacent to a small creek.
24JF961	Halfway Mine and Prehistoric site		Multicomponent site with primary remains of lode mining during the Depression era. Prehistoric evidence consists of faint pictograph and a projectile point. Halfway Mine is recommended eligible for the NR under Criterion A & D; The prehistoric component is also considered eligible;

SITE NUMBER	SITE NAME	LEGAL LOCATION	DESCRIPTION and National Register Status
24JF964	Silver Queen Mine and lithic scatter		Multicomponent site with primary remains of lode mining during the Depression era. Prehistoric evidence is dispersed and intermixed with mine disturbance. Historic component presumed eligible under Criterion D; May contribute to Pipestone Historic District; Prehistoric site is determined to be not eligible for the NRHP (FS/SHPO CD 1996);
24JF995	Coyote Rockshelter		Prehistoric site; Late Period affiliation; located below natural-overhang rock; some historic evidence also; unevaluated, but additional work recommended; (presumed eligible)
24JF1319	Double Boulder Pictographs		Prehistoric Rock Art; red pigment on granite boulders; recommended eligible
24JF1320	Xmas Tree Pictographs		Prehistoric Rock Art; red pigment on granite outcrop; recommended eligible
24JF1321	Pinacle Rock Pictographs		Prehistoric Rock Art; red pigment on granite spire; recommended eligible for NRHP
24JF1322	West Bank Pictographs		Prehistoric Rock Art; on granite boulders; complex of paintings in good condition; recommended NRHP eligible
24JF1324	Fallen Slab Pictographs		Prehistoric Rock Art; on granite slabs at upland, dry site; recommended eligible.
24JF1331	TeBay Spring Lithic Scatter		Prehistoric Site; located around upland spring; so far no temporal diagnostics; recommended eligible under Criterion D;
24JF1539	Watson Gulch Prehistoric		Prehistoric site; temporary camp around small upland spring/seep; lithic scatter with no diagnostics or features apparent; Considered eligible for the NRHP under Criterion D until testing further defines the site;
24JF1543	Elder Creek Prehistoric Camp		Prehistoric habitation/campsite; Hearth features visible, lithics, no diagnostics; Considered eligible for the NRHP under Criterion D until testing or salvage can be done;
24JF1544	Crystal chipping station		Prehistoric chipping station, not far from crystal quarry; recommended eligible D;
24JF1545	Suicide Lithic Scatter		Prehistoric; sparse lithic scatter, no diagnostics; Unevaluated for NRHP;
24JF1546	Prehistoric Campsite - multiple loci		Prehistoric; numerous activity areas, heavily disturbed. Archaic projectile point types; Unevaluated for NR
24JF1547	Stone Oven, Log Bridge and Prehistoric		Multicomponent, historic ethnic and prehistoric; recommended Criterion D eligible

SITE NUMBER	SITE NAME	LEGAL LOCATION	DESCRIPTION and National Register Status
24JF1549	Halfway crossing Lithic Scatter		Prehistoric; light lithic scatter; thus far, no temporal diagnostics or other features. Unevaluated for NR.
24JF1579	Trestle Multi-component		Prehistoric campsite on small bench; indicates Archaic Period use. Pictograph located nearby. Historic component related to early 20th century placer mining. Recommended eligible under Criterion D and possibly A.
24JF1580	Trestle Pictograph		Small pictograph in rock shelter about 1/8 mile from prehistoric campsite (24JF1579). May also have historic component; unevaluated for NRHP.
24JF1581	Monolith Pictograph		Part of complex of pictographs surrounding prehistoric camp. Red pigment on granite boulder. Presumed eligible to NRHP as part of Whitetail prehistoric complex.
24JF1582	Upper Buffalo skull site		Small campsite on large terrace/plain. There may be additional subsurface. No temporal diagnostics located. Bison skull found nearby. Presumed eligible under Criterion D.
24JF1583	Lower Buffalo skull site		Prehistoric campsite with fire-cracked rock, groundstone, and lithic artifacts; Archaic Period represented in projectile point style. Recommended eligible to NRHP under Criterion D.
24JF1584	Crystal Pits Quarry		Crystal quarry with contemporary use; a few discarded artifacts and areas of cultural flakes indicate prehistoric quarrying. Presumed eligible to NRHP under Criterion D.
24JF1585	First Hartman Creek Prehistoric Campsite		Part of a multiple site prehistoric district along both sides of the Creek; Evidence of Archaic and Late Period use. The site is presumed eligible for the NR under Criterion D.
24JF1586	Second Hartman Creek Prehistoric Campsite		Part of a multiple site district; site boundaries are arbitrary based on density. This site is somewhat disturbed. Late Period diagnostics and lithic debris. It is presumed eligible for the NR under Criterion D;
24JF1587	Lindsey's Site		Prehistoric site eroding from a deep road cut. Campsite/lithic scatter, hearth feature, tools and artifacts; it is presumed eligible under Criterion D.
24JF1588	Crystal Spring Quarry		Crystal lithic procurement quarry with primary and secondary flakes, deflated cores and debitage; east of Lindsey's site near an upland seep. Site may represent Criterion A, C or D.
24JF1589	Upper Hartman Creek Prehistoric		Prehistoric campsite with multiple activity loci and evidence of Archaic Period use. The site isturbed by two-track road. Recommended eligible under Criterion D.

SITE NUMBER	SITE NAME	LEGAL LOCATION	DESCRIPTION and National Register Status
24JF1590	Grouse Cr-BT Prehistoric		Small open air campsite near natural rock-shelters, patterned artifacts indicate Archaic Period use. Site is very intact. Recommended eligible under Criterion D.
24JF1593	Ali's Site		Lithic Scatter; untested; patterned artifacts indicate Archaic and Early Archaic or possibly late Paleo period use. One of a cluster of sites which may make up a small district; the site is actively eroding. Recommended potentially eligible.
24JF1639	Beefstraight Prehistoric		Lithic scatter, small campsite; untested; field verified; on private inholding within the boundaries of National Forest. Unevaluated for NRHP
24JF1640	Homestake Prehistoric		Lithic scatter across alluvial fan; no diagnostic artifacts noted. Very disturbed. Recommended as not eligible due to loss of integrity.

Figure 4. Map of Whitetail Pipestone Management Unit depicting locations of Pre-historic sites (and site clusters) on Beaverhead-Deerlodge National Forest lands.

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PART IV:
CULTURE HISTORY AND CULTURAL RESOURCES
A REGIONAL OVERVIEW

4.1 Prehistoric Culture History

The temporal and spatial aspects of human prehistory and history are one of the primary foci of archaeology. The previously outlined theoretical and environmental perspectives and the existing prehistoric data for the Whitetail Pipestone have been integrated with regional chronology as provided by Frison (1991:15-125), Frison and Mainfort (1996:8-40) and Greiser (1984:35-48). The regional culture history is discussed with emphasis on sites proximate to or within the analysis area. Selected phases or periods which may relate to specific sites are highlighted. The analysis area is known as a cultural crossroads (Beck 1989:29, Greiser 1984:35, Indian Claims Commission 1978), and use or occupation could have occurred by different cultural groups at different times in prehistory. Assigning cultural affiliation at archaeological sites is difficult at best. Where 'accepted' associations are observed, I've included notations when presenting data. (Also see Ethnographic Evidence 4.1.6).

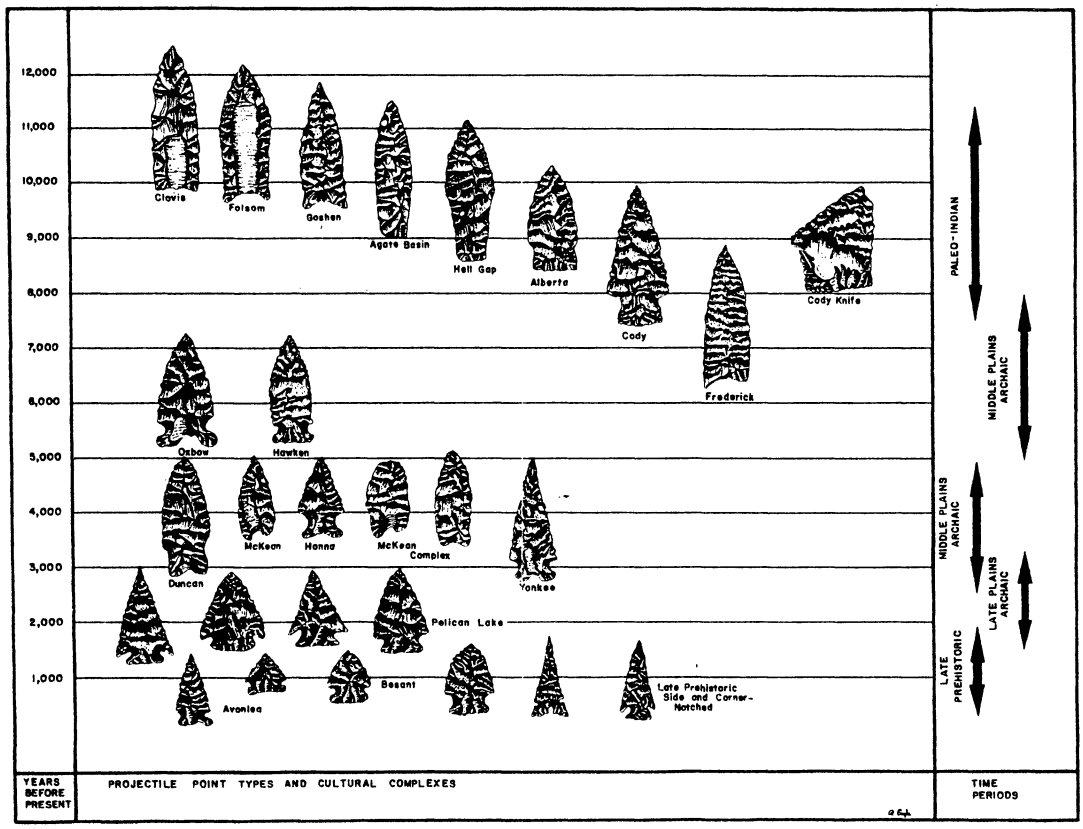
Using Projectile point styles as temporal indicators is a relative dating technique often employed by researchers. Present cultural chronologies use projectile point morphology and certain tool types as diagnostic temporal and cultural markers (Frison and Mainfort 1996:10, Greiser 1984, Whittaker 1994). This method gives archaeologists a basis for comparison. Assigning temporal or cultural affiliation to archaeological sites by the use of projectile point typology is far from perfect. It is often confused by variations within types and questions about the relevance of point morphology to prehistoric cultural groups (Frison and Mainfort 1996:10 after Stanfill 1988). The widespread use of this relative dating technique is probably due to the abundance of stone implements which survive to reach the archaeologic record and the ease (however subjective) in application.

Other analysis methods address inconsistencies in current data. The increasing emphasis placed on methodology is geared toward a better understanding of site formation processes and microstratigraphy. Results of this more-tedious research bolster the effectiveness of relative dating techniques (Waters 1992). A greater concern with provenience, collection methods, and preparation of radiocarbon and other dating samples aids in more accuracy of site interpretation and chronological association. Accelerated mass spectrometry (AMS) can provide good 'absolute' dating results with smaller samples than were required for past ^{14}C dating. With the advantages and

advances of new and more efficient dating techniques and the development and use of better field instruments the accuracy of our archaeological data are increasing.

Prehistoric human occupations were rarely uniform over large areas, particularly where there were significant ecological changes over short distances. This situation was and still is particularly true on the Northwestern Plains and adjacent mountains (Frison 1991:16). Consequently, changes in cultural chronology may be detected over relatively short distances. Projectile points and certain tools are usually the best temporal indicators in site components of pre-ceramic age (Frison 1991:16). Studies of tool and weaponry function and other analysis, correlated with in situ artifact assemblages recovered in sites with high stratigraphic integrity have led to the interpretation of projectile points as stylistic or typological indicators of chronology (Frison 1991:16, Greiser 1984).

Figure 5. Projectile Point Indicators for Montana (after Herbort/Engels 1987)



A cultural chronology for Southwest Montana surrounding the analysis area is outlined below. This description of prehistory relies heavily on the relative progression of stone tool types as indicators of chronology. Associated site attributes are interpreted as evidence of certain lifeways. The range of typical and stylistic projectile points, as identified by researchers, and generally illustrated in Figure 5, is included for each period

of prehistory. Where similar styles have been documented in the Whitetail Pipestone, I have added illustrations for comparison. In completing this portion of the analysis, I noted that one of the biggest difficulties in using currently published typology charts is inconsistency in scale. For the purposes of this paper and associated analysis, I have depicted all typology illustrations for the analysis area as close to "actual size" as is possible.

For each cultural period and phase identified, I list alternate classificatory terminology used by various researchers, as applicable, to avoid confusion. A range of dates and the referenced researcher is included in parenthesis at the heading. All dates are adjusted to "before present" (B.P.) or "years ago" (y.a.), which I have used interchangeably. Dating is usually the result of ^{14}C analysis in sites with associated projectile point styles. Most periods reflect a broad temporal range as indicated by a specific technological or typological change. The phases, or further breakdowns within the periods, are often named for the site where the identification was first made possible. For example, the Hell Gap phase, within the Late Paleoindian period was named for a parabolic dune site in a geographic area known as Hell Gap.

"The stratigraphic record for the Northwestern Plains reveals a succession of cultural groups...band-level hunters and gatherers, who shifted constantly in response to available food (and) resources....Different subsistence strategies were required" both across the landscape and throughout time (Frison 1991:19) as outlined below.

4.1.1 Paleoindian Period (Frison ~11,500 y.a. to 8000 y.a.) Early Prehistoric (Greiser ~13,000+ to 7500 y.a.)

The first inhabitants of North America are known to archaeologists as Paleoindian peoples. As George Frison indicated in *Prehistoric Hunters of the High Plains* (1978, rev 1991) and further discussed in a later work on Northern and Northwest Plains prehistory (Frison and Mainfort 1996), there are recognizable archaeological assemblages relating to two distinct types of Paleoindian peoples. These assemblages, including the associated artifact styles, technologies and ecological systems are known as the Plains and the Foothill-Mountain Paleoindian Complexes. As their respective names imply, each of these groups inhabited a different ecological niche, exploiting the resources available in that ecosystem (Frison and Mainfort 1996:17). Since the Whitetail Pipestone analysis area is a transition zone between the two ecosystems, both cultural complexes are discussed. If Paleo-inhabitants were present in the Whitetail Pipestone, and evidence suggests that they were, then knowledge of both of these models is necessary to most accurately interpret the archaeological record.

The ecosystem of the Paleo-period has been described as a "terminal Pleistocene (human) occupation dictated by the extent of glaciers and climatic conditions" (Greiser 1984:35-37). The late, ice-age vegetation would have been similar to what we know as tundra, and included sage, grass and some spruce and fir. Wildlife species of now extinct megafauna were represented by the mammoth, camel and horse, as well as more antiquated versions of the bison, sheep, deer and elk. The Paleoindian Period may be stratigraphically marked by Glacier Peak ash deposits.

4.1.1.1 Early Paleoindian

Pre-Clovis or Ancestral Clovis (prior to ~11,200 y.a.). Human occupation in North American prior to about 11,000 years ago is essentially undocumented. Researchers accept that there are presently no known assemblages distinctive enough to be considered the product of a pre-Clovis group (Frison and Mainfort 1996:10).

Clovis (11,200 10,900 y.a.) The southern end of the proposed "ice-free corridor" is just north of the study area (Knight 1989: Figure 6). Whether or not Clovis or other groups migrated south through the corridor is yet unconfirmed, though contemporary researchers see it as a good possibility and highly logical (Frison and Mainfort 1996:10). Clovis represents a terminal ice-age human adaptation characterized by a hunting technology displaying distinctive, fluted spearpoints and carved bone and ivory shafts. Current radiocarbon dates on Clovis sites suggest an age range of approximately 11,200 to 10,900 years ago (Frison and Mainfort 1996:10 after Haynes 1993). Northern Plains, archaeological evidence demonstrates that Clovis hunters pursued mammoth, bison and to a lesser extent, horse, camel, pronghorn and jackrabbit. Continent-wide studies indicate a use of a more broad spectrum of small animals and greater inclusion of plant species as well. Frison believes that certain aspects of Clovis lithic technology are now sufficiently understood to make an "identification...without the diagnostic spearpoint" (Frison and Mainfort 1996:10).

Clovis sites are extremely rare. Nearest the study area, two Clovis-age sites have been documented (24PA506, 24JF4). The Anzick site (24PA506) near Wilsall, in south central Montana is located about 65 miles east, on the far side of the Bridger Range. The site revealed over 100 lithic items and several objects of carved bone, all of which were covered with a heavy coating of red ochre (The Montana Historical Society Museum Collection: display). The Anzick collection exhibits very large points and bifaces which were manufactured from high quality stone from a variety of sources. The Anzick site was found in a disturbed state; it is believed to have been a secondary burial or cache,

similar to others of Clovis age. It included red-ochre covered skeletal material representing the partial remains of two immature humans (Frison 1991:39-41).

The MacHaffie site (24JF4) is approximately 35 miles from the Whitetail Pipestone, in the southeastern Elkhorn Mountains. This second Clovis-age site is discussed by Deaver and Deaver (1986:85) in the Butte District BLM work. The MacHaffie site (24JF4) is especially noteworthy, because it contained intact stratified deposits that represent a series of cultural complexes.

Aside from the Paleoindian lithic and faunal assemblages, a common element in many sites is red ochre (Frison and Mainfort 1996:16). Ritual use, as is implied at the Anzick site is noteworthy; however, researchers have also found that ochre is an excellent preservative, both for wood and other perishable items, as well as having abrasive qualities for polishing (Frison and Mainfort 1996:16). It may have been multi-functional in various periods of prehistory and is further discussed under "regional phenomena" below.

Goshen (11,300 - 11,000 y.a) is a cultural complex illustrated by Frison (Frison and Mainfort 1996:12) which incorporates a pressure flaking technology that is believed to represent a direct precursor of Folsom. Noteworthy is that "most, if not all Goshen assemblages originate from sites outside of Montana," indicating that it may be a localized phenomena.

Windust is a cultural complex from the Columbia Plateau area which is contemporaneous with early Plains Paleoindian complexes. The Windust is discussed by Greiser (1984:37) in comparing projectile point topologies and related stylistic attributes. Noteworthy is that the Windust style is of lanceolate form, similar to the Plains varieties, but without the characteristic "flute."

Folsom (10,800 to 10,300 y.a.) sites and components are found in the vicinity of Montana east of the Rocky Mountains. Reported radiocarbon dates from these components range from about 10,800 to 10,300 years ago and overlap with Agate Basin at a number of sites (Frison and Mainfort 1996:12). Major Folsom sites have been discovered in locations favorable for bison procurement, close to open grassland areas, and at or very close to natural topographic traps into which animals were driven and killed. Similar topography is present in the Whitetail Pipestone, though no Folsom sites have yet been discovered there. Some Folsom sites are interpreted as "small communal kills"; some contain antelope remains (Frison and Mainfort 1996:12). Stone points from the Folsom complex have a characteristic "channel flake" removed at the base. Nearest the study area, Indian Creek (24BW626), Barton Gulch (24MA171), MacHaffie (24JF4) and Steel's Pass (24MA565) archaeological sites all contain Folsom components. Indian

Creek and MacHaffie are known from the nearby Elkhorn mountains; Barton Gulch is in the Ruby valley; Steel's Pass is only 20 miles to the south in the Highland Mountains. All are within sixty miles of the Whitetail Pipestone area. Subsistence data from two of these sites suggests a broad-based resource utilization rather than a focus on big game (Davis 1993, Davis et. al. 1987). Although bison is the most common mammal represented, deer, pronghorn, yellow-bellied marmot, rabbit species, blacktailed prairie dog and vole were also found at these sites.

Midland (10,700 -10,400 y.a.) complex has also been postulated (Frison 1991:50 after Irwin-Williams et. al. 1973), but has not been fleshed out sufficiently to warrant distinction.

The "Foothill-Mountain" Paleoindian (10,000 - 10,500 y.a.) assemblage and projectile point attributes were noted more than two decades ago (Frison 1992, Frison and Mainfort 1996:16, Greiser 1984:38). When compared to others types, or styles, of the same age in Plains cultures, the stone tools from Foothill-Mountain Paleoindian sites were distinctive. They display a definite "Paleo" character which may be represented in the long, lanceolate points, either stemmed, unstemmed, which exhibit parallel, oblique flaking. Frison sees the earliest Foothill-Mountain groups as likely part of the Goshen complex (Frison and Mainfort 1996:16). Greiser terms this cultural phenomena the "Plano collective" and believes that it represents a territorial movement and diversification resulting from population growth. Projectile points are often found on the surface at high elevations. Late Foothill-Mountain styles have been dated to between 10,000 and 9,000 years ago. Additional research is necessary to most accurately place this group in its prehistoric context; the Whitetail Pipestone and surrounding area may be a good candidate for this work. Evidence of possible Foothill-Mountain Paleoindian projectile point typology is present at site 24JF253 in the analysis area.

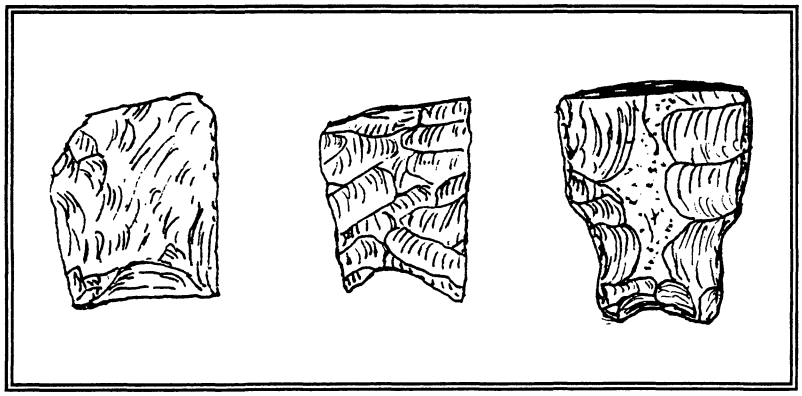


Figure 6.
Possible Foothill-Mountain Paleoindian projectile points - 24JF253 - Werner Collection

Figure 7.
Possible Agate Basin point - 24JF253 - Werner Collection

Agate Basin (10,400 - 9,600 -> 7,245?) is named for a site in eastern Wyoming, which has been extensively investigated (Frison and Mainfort 1996:13). Radio-carbon dates place the Agate Basin component at just over 10,400 years ago. Other sites date it as recently as 9600 y.a. The Agate Basin projectile point morphology is distinct; the form is a long and narrow leaf shape, with no notches. Nearest the study area a possible Agate Basin site (24MA778) near the Varney Bridge in the upper Madison River has been dated at 7245 y.a. (Brumley 1989). A 1997 BLM inventory located a projectile point fragment from the Ringing Rocks area in the Whitetail Pipestone which may be of Agate Basin typology (Sanders and Kuntz 1997). Other possible Agate Basin points (basal sections) are found in the Werner Collection from site 24JF253, central to the Whitetail Pipestone, and in the Steel's Pass information from just south of the study area (Davis 1993:56). Agate Basin appears to be a continuation of Goshen and Folsom lifeways where bison was the economical mainstay (Frison and Mainfort 1996:13).

Hell Gap (10,000 y.a.) as a projectile point style and a cultural complex was first recognized in Wyoming in sites where bison procurement was associated with "parabolic dune" entrapment (Frison and Mainfort 1996:13). The site illustrates the versatility of Paleoindian hunting strategies. Nearer the Whitetail Pipestone, a "deeply buried Hell Gap component at Indian Creek (24BW626) was dated to about 10,000 y.a. (Davis 1984, 1993). Hell Gap points from the Indian Creek site were materially sourced to Obsidian Cliff in Yellowstone and Camas-Dry Creek in Idaho. The Flying D Archaeological Project recovered two possible Hell Gap points from Madison County sites (Baumler et. al. 1993:9).

Alberta (9,500 - 9,000 y.a.) style, also a part of the Paleoindian Period was first recognized by the distinctive points in Canada (hence the name). They exhibit broad stems and abrupt shoulders. Often referred to collectively as part of the Alberta-Cody complex, these points are similar to ones from a radio-carbon dated site in Wyoming at 10,000 y.a. (Frison and Mainfort 1996:13)

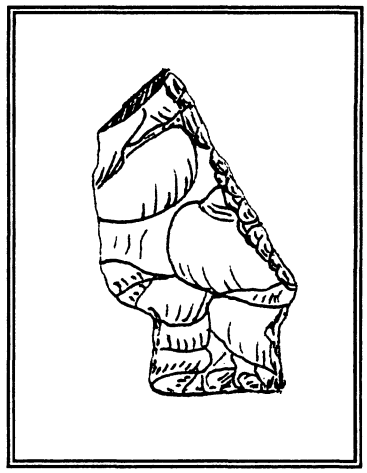


Figure 8.
Cody-style knife - 24JF1593

Cody (9,300 - 8,800 y.a.) is little separated from the preceding Alberta and the Alberta-Cody transition cultural and stylistic complexes (Frison and Mainfort 1996:15). Based on several radiocarbon determinations,

the Cody complex dates to between about 8,800 and 9300 y.a. In addition to the earlier varieties, the complex includes subsequent variations known as Scottsbluff and Eden.

A stone tool, stylistically very similar to the "Cody knife" was found at the Whitetail Pipestone site of 24JF1590 on Hartman Creek (Figure 8). The Hartman Creek knife, though somewhat smaller, is compared to one recovered at the Medicine Lodge Creek site which was dated at 8800 y.a. (Frison and Mainfort 1996:15). Further investigation and subsurface testing is warranted at the Whitetail site to more accurately date this occupation.

Scottsbluff and Eden (9,000 y.a.) components are also considered to be part of the "Cody complex." Nearest the study area, the MacHaffie site (24JF4) in the Elkhorn Mountains contained a Scottsbluff component dated at 8100 y.a. This is late compared to research in Wyoming and the central plains. Faunal remains at the MacHaffie site include bison, deer, rabbit, and wolf. Lithic analysis suggests that the site was a small, short-term occupation where inhabitants utilized locally available chert (Frison and Mainfort 1996:15, after Knudson 1983). The Meyers-Hindman site, another Cody-complex site in southern Montana (24PA504) contained a Scottsbluff component exhibiting butchered bison, deer, elk, mountain sheep and canids and was dated at about 8900 y.a. (Frison and Mainfort 1996:15)

4.1.1.2 Late Paleoindian (8800 y.a. - 8000 y.a.)

Lanceolate points representative of the Late Paleoindian Period are found in a series of potentially related cultural complexes known as the Angostura, Lusk, James Allen, Frederick, Lovell constricted and Pryor Stemmed (Frison and Mainfort 1996:16). Variations to these are poorly understood, and there is considerable typological confusion. Excavations at the Barton Gulch site in the Ruby Valley (24MA171) by Les Davis exposed two late Paleoindian components. The Alder complex, dated at abut 9400 years ago contained "Ruby Valley" points, while the later Hardinger complex was dated at approximately 8800 years ago (Frison and Mainfort 1996, after Davis et al. 1989). The site contained large quantities of debitage, preforms, lanceolate points, knives, and scrapers as well as the faunal remains of cottontail, rabbit, mink, and deer. Most had been culturally processed. From the Steel's Pass site in Hell's Canyon (24MA565), Davis describes lanceolate points which are reminiscent of the Ruby Valley points found at Barton Gulch (1993:56).

Late Paleo Foothill-Mountain Cultural Complexes may have varied from contemporaneous groups. During the late Paleoindian Period, Frison finds that "there were cultural groups living in the foothills and mountain areas that differed from those

living in the open plains" (1991:19). He postulates that this resulted from different resources found in the respective areas. Each area required specialized and "mutually exclusive" subsistence strategies. Frison cites the dominate mountain sheep utilization in the assemblage at Mummy Cave in northwestern Wyoming as indicative of Foothill-Mountain peoples. There are some sites, however, such as Pictograph Cave near Billings, which exhibit artifacts from both Plains and Foothill-Mountain Paleo-dwellers (Frison and Mainfort 1996:17). Also noteworthy is the presumption that the Foothill-Mountain groups were more isolated and used mainly locally-available lithic sources. This hypothesis may prove relevant in the Whitetail Pipestone, as certain, identifiable lithic sources are present in the area.

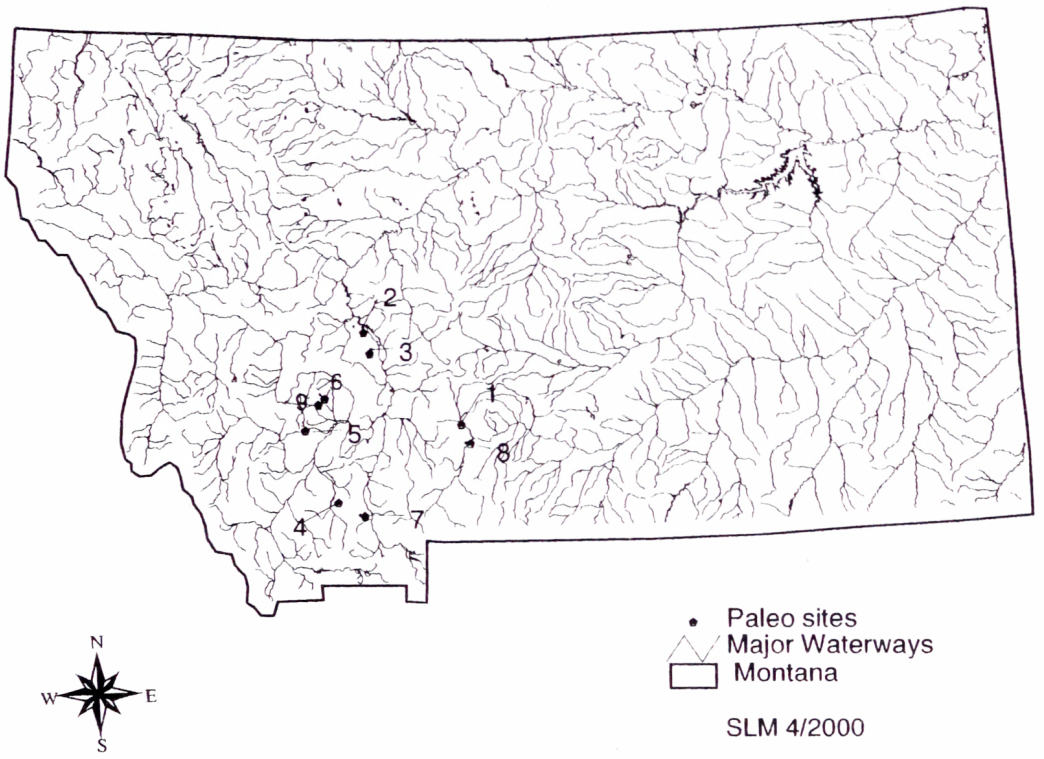
Frison notes that "rigid horizontal time boundaries are not always valid," finding that "Foothill-Mountain oriented groups were living an Archaic way of life during late Paleoindian times..." (Frison and Mainfort 1996:21). Under this hypothesis, what we believe are early Archaic sites within the Whitetail Pipestone, may actually coincide with the late Paleoindian period. Each new piece of evidence that we uncover in the research area will add to defining the prehistoric sequence for this particular ecosystem.

Lovell Constricted and Pryor Stemmed (8300 - 7800 y.a.) points are considered late Paleoindian and are known from Foothill-Mountain sites in northern Wyoming. Dates range from about 7800 to 8300 years ago (Frison and Mainfort 1996:16). The nearest stratified sequence of Foothill-Mountain Paleoindian occupation is found at the Lookingbill site in the southern Absaroka Mountains. A terminal Paleoindian component at the Lookingbill site produced many distinctive fishtail-shaped points of a yet-unnamed type dating about 8000 years ago. Specimens from the Werner Collection at 24JF253 in the Whitetail Pipestone bear a remarkable resemblance to points from the Lookingbill site (Choquette 1987:Figure 24); however, similar points at 24JF253 have been obsidian dated to less than 6000 years ago (See McKean Complex 4.1.2.2 below).

Deaver and Deaver (1986:85) see indications of "a slight rise in population density" during the late Paleoindian Period, noting a possible correlation with the (presumed) warmer and dryer conditions. Their research found that preferred materials for projectile points in the BLM Butte District, during this period, were basalt and cryptocrystalline. In addition to those local sites already mentioned, three other archaeology sites, dating from the late Paleoindian Period are found within 150 miles of the Whitetail Pipestone. These include the MacHaffie (24JF4), the Myers-Hindman (24PA504) and the Indian Creek

(24BW626) sites (Deaver and Deaver 1990:85, Frison and Mainfort 1996:17). Comparative information from these sites will prove helpful in developing a local chronology.

Figure 9. Map of selected Paleoindian sites mentioned in the text.



1) 24PA506 Anzick; 2) 24JF4 MacHaffie; 3) 24BW626 - Indian Creek; 4) 24MA171 Barton Gulch; 5) 24MA565 - Steel's Pass; 6) 24JF253 Lower Whitetail; 7) 24MA778 Varney Bridge; 8) 24PA504 - Meyer's Hindman; 9) 24JF1590 - Ali's Site

4.1.2 Archaic (8000 y.a. - 1000 or 1500 y.a. - Frison) including: Early, Middle and Late Plains Archaic Periods

Middle Prehistoric (7500 y.a. - 1600 y. a. - Greiser) including: Early, Middle and Late - Middle Prehistoric Periods

Both Frison and Greiser list three divisions of the Archaic or Middle Prehistoric Periods which encompass post-Paleoindian, pre-ceramic cultures of the Northern Plains and Central Rocky Mountains. These include the Early, Middle and Late Plains Archaic (Frison and Mainfort 1996:18) or the Early, Middle and Late Middle-Prehistoric (Greiser

1984:34). Most researchers agree that the change in technology which is represented in the differing sizes and types of projectile points at this threshold is the evolution from the spear to the atlatl.

4.1.2.1 Early Plains Archaic (8000 y. a. to 3500 y. a. - Frison) Early Middle Prehistoric (7500 y.a. to 4500 y.a. Greiser)

Early Plains Archaic (8000 y.a. a. - 3500 y.a.) as a cultural period is recognized by the appearance of large side-notched point types bearing such names as Bitterroot, Hawken, Pahaska Side-Notched, Blackwater Side-Notched and other varieties yet unnamed (Frison and Mainfort 1996:18, Greiser 1984:38). This period began about 8000 years ago. The projectile point typological change may be a result of in situ technological developments, culture immigration or diffusion, or a combination of these. Major elements of Early Plains Archaic include assemblages with grinding tools and stone-filled roasting pits; cultural practices using these technologies were in use during late Paleoindian times, and researchers believe that plant use continued to intensify during the Early Archaic period (Deaver and Deaver 1986, Frison and Mainfort 1996:21, Frison 1991:89). Attributes of Early Plains Archaic points are not well defined. Intact stratigraphy is essential to place these points accurately in the chronological record. Frison believes that the side-notched projectile points may represent "nothing more than the addition of notches to the late Paleoindian lanceolate type...perhaps for hafting" (Frison and Mainfort 1996:19).

Because of the warmer, drier climatic trend, the Early Plains Archaic Period was one of "weathering." This period was warm; in some places semi-arid conditions of the Altithermal produced proportional desert vegetation on the Plains (Greiser 1984:41). Caves and rock shelters contain the best data. Nearest the study area, at the Indian Creek site (24BW626), a Mummy Cave/Bitterroot component produced radiocarbon and obsidian hydration dates indicating an age of about 6600 years (Frison and Mainfort 1996:19). The associated faunal assemblage includes mountain sheep, which Frison believes is suggestive of an upland economy. An early Archaic component at the Barton Gulch site (Frison and Mainfort 1996:19, Davis et al. 1989) produced Bitterroot points dated between about 6200 and 6100 years ago. At another southwestern Montana site, Mammoth Meadows, two Bitterroot points were found in an undated zone above the Cody complex (Frison and Mainfort 1996:19 after Bonnichsen et al. 1992). Frison mentions "a notable decline in the quality of lithic technology toward the end of the period."

Evidence from open plains and interior intermontane basins suggests decreased human activity when compared to late Paleoindian times. This phenomena may be

partially reflective of the geologic activity during the dry Altithermal, which caused some sites to erode and may have more deeply buried others (Frison 1996:19). Presumably, during this time, people shifted territories to maximize food resources. Greiser's study finds a trend in archaeology sites during this period, where faunal remains represent fewer bison and greater numbers of bighorn sheep (1984:41). Bison herds decreased significantly during the Early Plains Archaic. Communal hunting by means of a "jump" is first documented during this period. The Head-Smashed-In site in Alberta illustrates this hunting method from nearly 5700 years ago (Frison and Mainfort 1996:19, after Reeves 1978). Antelope, mule deer, mountain sheep, and bison utilization is documented at a number of early Plains Archaic sites.

Bitterroot/Mummy Cave (7500-5500 y.a.) This period is researched by Greiser (1984:41) who relates some disparity about the origins of the complex. The representative projectile points are found in older sites. In the Northern Rockies, these sites predate Mt. Mazama ash levels. In the Plateau area to the west, they post-date Mazama levels. The hypothesis being that the population shifted to the mountains during the Altithermal (Greiser 1984:41). Another explanation might be the a general population trend of Bitterroot peoples westward. A Bitterroot/Mummy Cave component is present at the Indian Creek site (24BW626) on the east front of the Rockies, north of the study area. Others are believed present in the Anaconda-Pintler Mountains to the west (Munger and Morris, 2000). A partial Bitterroot-style point was recovered from a Madison County site during the Flying D Archaeological Project (Baumler and Schwab 1993:9).

Oxbow (5,700+ y.a. - 3500 y.a.). Frison describes the projectile points which represent the Oxbow complex as having side-notches with deep basal concavities (Frison and Mainfort 1996:19). Dates are believed to range from nearly 5700 to over 4000 years ago. The Oxbow complex often co-occurs with the Bitterroot or later McKean ones, indicating a need for good stratigraphy (Greiser 1984:41). Three Oxbow components at the Sun River Site near Great Falls (24CA74) were dated from about 5200 to 3500 years ago and faunal analysis suggests a shift from pronghorn hunting in the earliest levels to bison hunting during later times (Frison and Mainfort 1996 after Greiser et al. 1983). The Steel's Pass site (24MA565) just south of the study area contained an Oxbow component (Davis 1993:56). No mass bison kills are noted in association with Oxbow indicators (Frison and Mainfort 1996:19 after Greiser et al. 1983). The present evidence suggests that Oxbow peoples got as far south as southern Montana and Northern Wyoming. The Flying D Project in extreme southern Montana located one possible Oxbow site (24MA1514) in the Cherry Creek complex (Baumler et al. 1993:8e). Within the study

area, two Oxbow projectile point bases were found at the Lower Whitetail site (24JF253 Werner Collection); another complete point was located as an isolated find on the North Fork Little Boulder within the Whitetail Pipestone Management area (Morris and Leetz 1997).

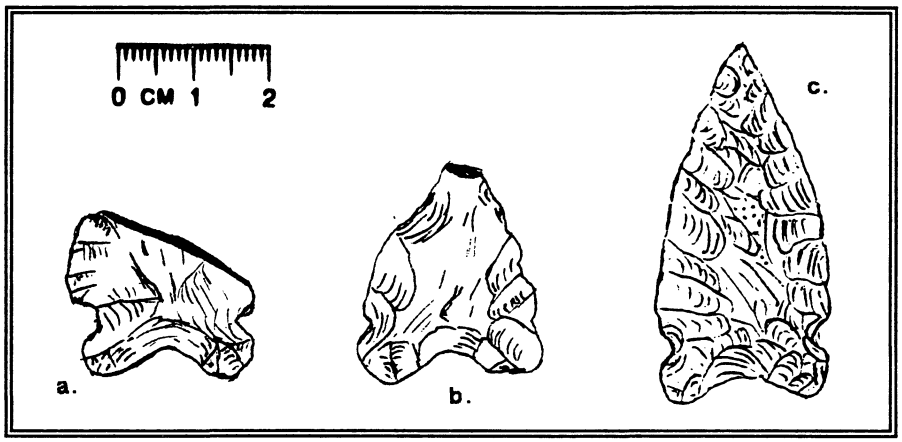


Figure 10.

Oxbow-style projectile points:
a. and b. 24JF253;
c. isolate

The Oxbow diagnostic forms a transition type, overlapping both the end of the Early Plains Archaic and the beginning of the Middle Plains Archaic periods.

4.1.2.2 Middle Plains Archaic (~4,000 y.a. - 3000 y.a. Frison)

Middle Middle Prehistoric (~4500 y.a. - 3000 y.a. Greiser)

The Altithermal period on the Northern Plains was a time of reduced moisture and increased temperatures. It affected plants, animals and humans. Some researchers believe that a cooler period was interim between the Altithermal and modern climates. After the Altithermal, populations trended toward lower elevations (Greiser 1984:41). By about 4000 y.a. modern climates were established. A modern subspecies of bison, smaller and with a shorter horn span and different horn shape, had evolved by this time from the earlier Pleistocene and Post Pleistocene species (Frison and Mainfort 1996:20). A change in diagnostic projectile points may only coincidentally occur with the climatic and faunal changes.

McKean, also known as the McKean Complex (~4200 y.a. - 3000 y.a.) is defined on the basis of lanceolate points with deep to shallow basal notching (resembling fishtails) as well as those labelled Duncan, Hanna, and Mallory side-notched varieties (Frison 1991:89-91, Frison and Mainfort 1996:20). The range includes the "fishtail" points with indented bases known as "McKean," stemmed points with sloping shoulders termed "Duncan," and those with distinct shoulders and expanding stems called "Hanna" (Greiser 1984:43). Some confusion surrounds this complex; projectile points are similar in morphology to some late Paleoindian forms, however McKean points lack the blade

edge grinding near the base and the carefully executed, parallel-diagonal, pressure flaking. Frison identified a tool-type, besides the characteristic points, that is common to the Middle Plains Archaic; it is a side-notched knife that has appearance similar to a large projectile point (Frison and Mainfort 1996:15). This tool is apparently resharpened on one blade edge until worn out and discarded. Knives such as this have been found in the nearby south Elkhorns (24JF1318) and at the Lower Skull/Gillespie site (24JF1583) in the Whitetail Pipestone management unit (Morris and Leetz, 1996; Morris 2000).

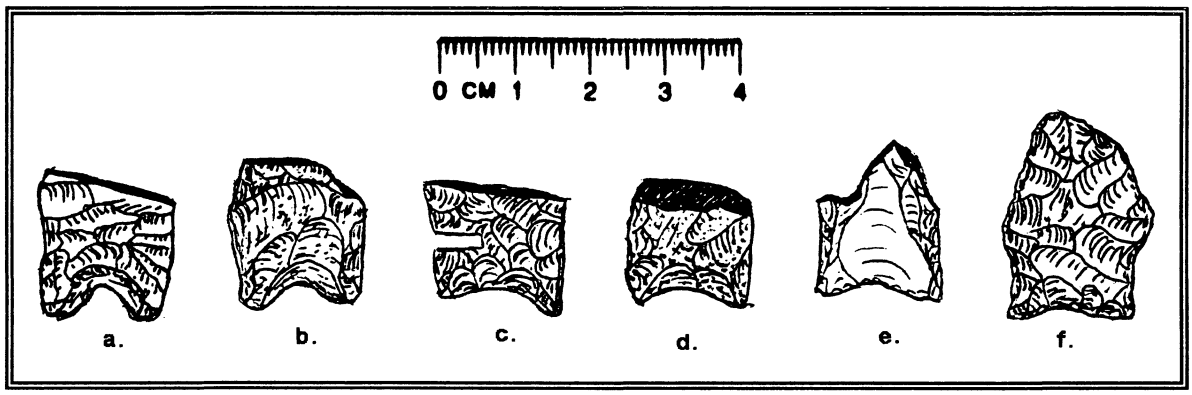


Figure 11. McKean Projectile Points: a-d 24JF253; e. 24JF1546; f. 24JF253; (c. hydration dated at 4670 B.P., e. sourced to Obsidian Cliff)

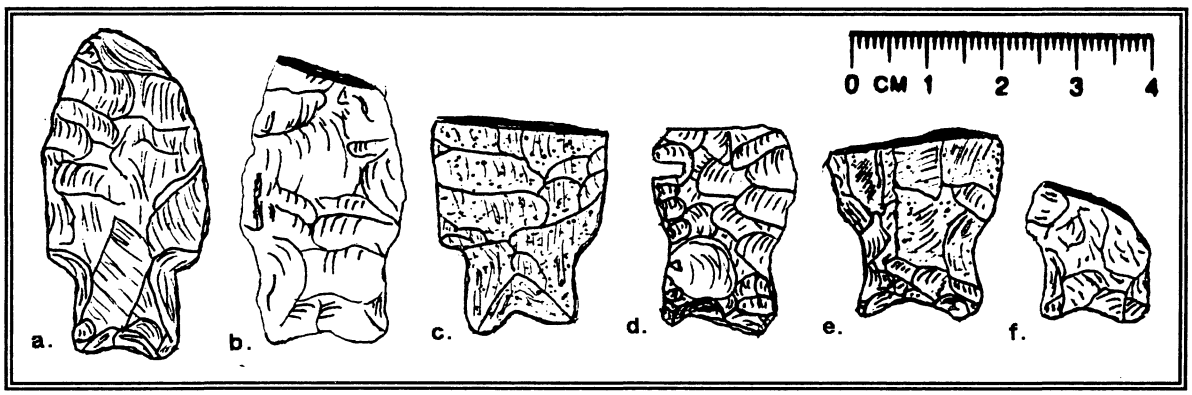


Figure 12. Duncan Projectile Points: a-f. 24JF253; (d. obsidian hydration dated at 5896 B.P)

In southern Montana, east of the study area, the Myers-Hindman site (24PA504) in the Yellowstone valley has a McKean component dated to between 3100 and 3500 y.a. This site exhibited a full range of McKean complex points as well as other bifaces, gravers, a shaft smoother and abundant debitage. Faunal material included pronghorn, beaver and bison. The Flying D Project noted an abundance of McKean age sites (24MA1550, 24MA1144, 24MA1138) in their study area of southern Montana (Baumler and Schwab 1993: 8-9). The McKean Complex is represented at the Steel's Pass site (24MA565) not far south of the Whitetail Pipestone (Davis 1993:57).

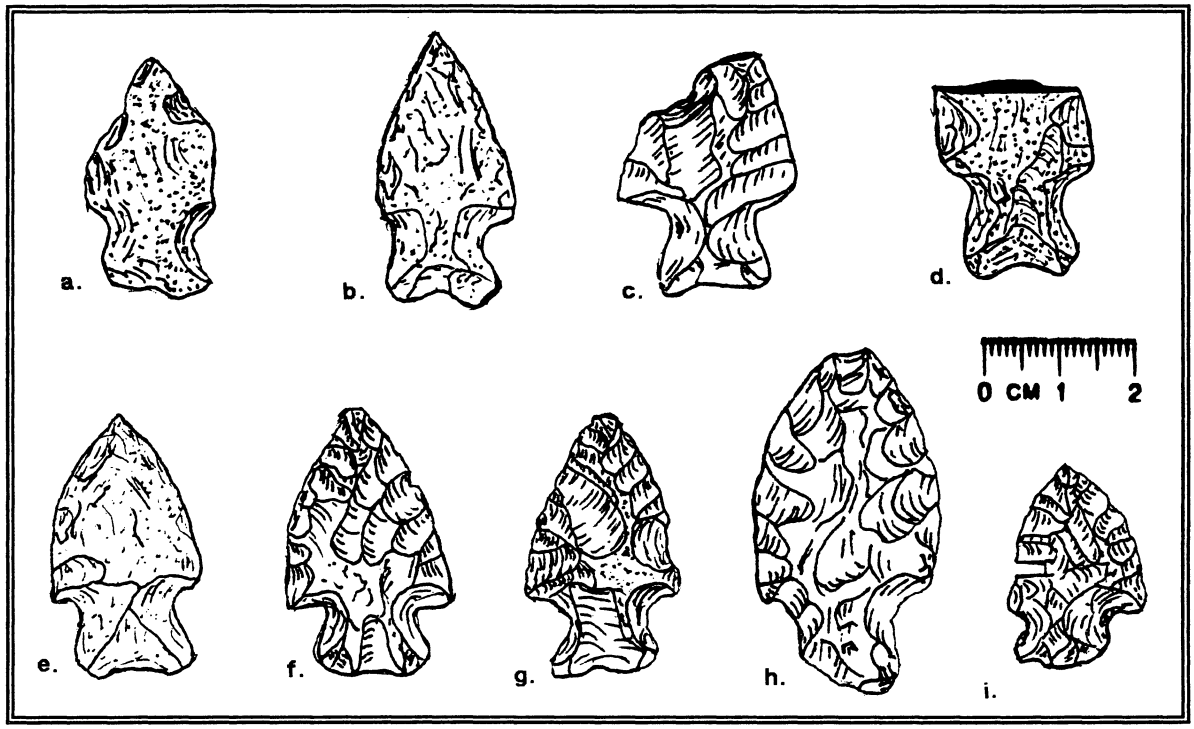


Figure 13. Hanna Projectile Points: a-g. 24JF253; h. 24JF1547; i. 24JF253; (i. hydration dated at 2972 B.P.)

Frison believes that stone circles or tipi rings, probably the remains of conical lodge structures, were being constructed at least by Middle Plains Archaic times. They became more numerous in the later periods (Frison and Mainfort 1996:21). Grinding stones and stone-filled fire or roasting pits are even more common during the Middle Archaic, indicating a greater reliance on plant foods, though some sites represent mainly faunal use (Greiser 1984:43). Many of the stone-filled preparation pits are lined with sandstone slabs. A "slab" fitting this description in the Werner Collection from Whitetail site 24JF253, was recovered from a level containing Archaic projectile points. In the collection, it is labeled as an "anvil." Further inspection of this artifact is warranted. According to Frison, "foothills-mountain rockshelters and caves were favorite locations of Middle Plains Archaic components" (Frison and Mainfort 1996: 21). This may hold true for the Whitetail Pipestone, where rockshelter sites have been found.

Greiser's work in southwestern Montana finds the McKean Complex not well represented in the Canyon Ferry or Limestone Hills areas, while elsewhere in the vicinity they make up the "second highest represented style" (1984:43-44). In reviewing this typology, Greiser distinguishes Hanna separately from the main McKean Complex, placing it later.

Three recorded sites on the National Forest in the Whitetail Pipestone contain projectile points diagnostic of McKean Complex use 24JF253, 24JF1546, 24JF1589, with

all varieties represented (Werner 1978, Morris 1999, Morris and Leetz 1998). Obsidian hydration dates from two McKean complex points at 24JF253 yielded figures of 4670 B.P. and 5896 B.P. (Davis 1973, 1978).

4.1.2.3 Late Plains Archaic (3000 y.a. - 1000 y.a. Frison)
Late Middle Prehistoric (3000 y.a. - 1600 y.a. Greiser)

The Late Plains Archaic Period represents a continuation of the previous lifeways, with the recognizable change primarily notable in projectile point types (Frison and Mainfort 1996:22): Extensive use of dry caves is seen in southeastern Montana and northeastern Wyoming. Undeniable evidence of atlatl/dart production is found in one such cave site. The remains of wooden and antler digging tools suggest recovery of roots and bulbs. The good preservation afforded by the dry cave environment provides archaeologists with many examples of perishable materials. Red ochre was sometimes used on perishables, perhaps in ritual use. Frison lists four sites with this characteristic (Frison and Mainfort 1996:22). Also noteworthy is the corner tang knife; Frison sees it as a distinctive Late Plains Archaic introduction, finding it "probably an earlier (Early Plains Archaic) knife type with the addition of addition of a 'tang'. " This bifacial, long and roughly triangular knife is more steeply beveled on the utilization edge (For illustration see Frison and Mainfort 1996:15).

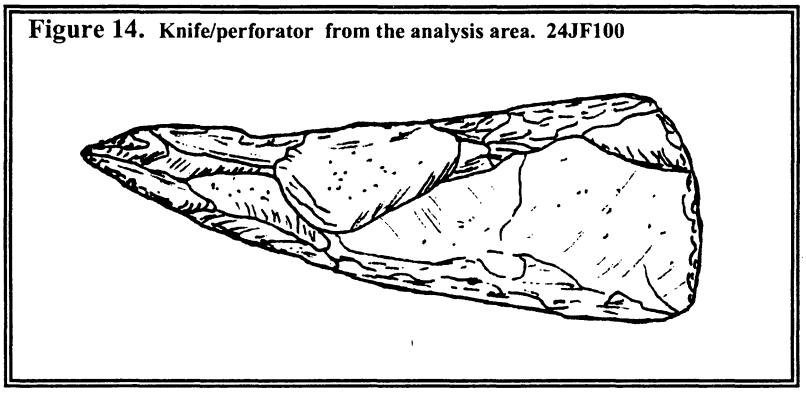


Figure 14. Knife/perforator from the analysis area. 24JF100

Of particular interest to the Whitetail Pipestone study area regarding the following phases of the Late Plains Archaic Period is a discussion in Frison's 1991 work (p. 105):

> In addition to the cultural groups of the late Plains Archaic that fall into the Pelican Lake, Yonkee, and Besant categories, there were others in which the diagnostic projectile points fall into the corner-notched varieties but their relationship to Pelican Lake, if any, is unknown and questionable. Evidence of these groups is found particularly in intermontane basins and in the foothill-mountain areas. Fire pits, stone circles, grinding stones and simple chipped stone tools comprise the most visible features and artifacts. Fire pit areas may cover areas of 50 hectares and larger. Whether or not these groups were more or less permanent residents or groups represented for only a seasonal round of procurement activities strongly oriented toward plant food gathering and small animal hunting is not yet known.

Yonkee (3100 y.a. to 2700 y.a.) refers to a cultural complex which has caused some confusion in High Plains Archaeology. The Powers - Yonkee Bison Trap produced a radiocarbon date of roughly 4400 years ago, but that is now considered suspect (Frison and Mainfort 1996:22). Consistent later dates of 3100 to 2700 y.a. gave reconsideration to the complex and is now viewed as part of the Late Plains Archaic Period. Traps and pounds are common. Southeastern Montana contains the closest researched Yonkee sites. At the Kobold site (24BH406), bison jumping was the method of procurement, however at many other Yonkee sites, arroyo traps were employed in the hunting strategy (Frison and Mainfort 1996:23). Projectile point styles from three sites in the Whitetail Pipestone exhibit characteristics which may link them to this complex. The Lower Skull site (24JF1583), Lindsey's site (24JF1587) and the small rockshelter at Halfway Creek Mine (24JF961) may be candidates for further research along these lines.

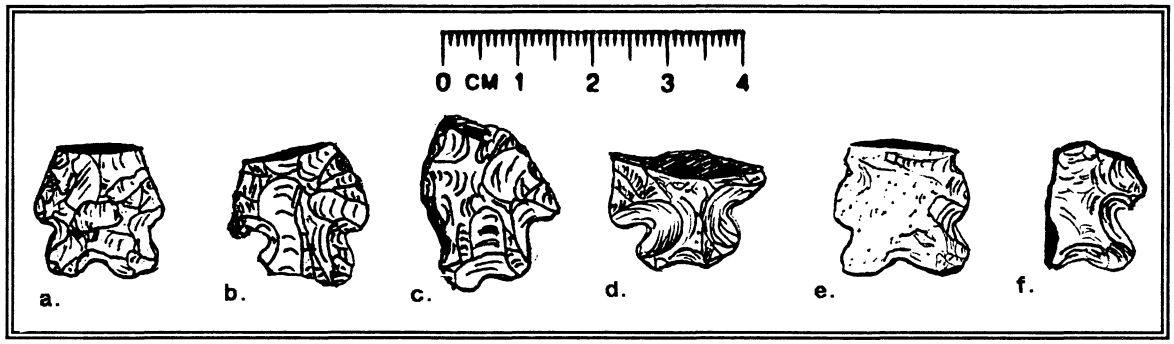


Figure 15. Possible "Yonkee" style projectile points: a. 24JF1587; b. 24JF1589; c-d. 24JF1583; e. 24JF1593; f. 24JF1589; (g. sourced to Bear Gulch, ID)

Pelican Lake (3,500 - 1600 y.a.) is part of the late Plains Archaic on the Northern and Northwestern Plains (Frison and Mainfort 1996:23). The McKean complex is gradually replaced by the Pelican Lake cultural group. Pelican Lake is generally dated to about 3000-2000 y.a (Frison 1991:103). Some researchers give it a wider range, 3500-1600 y.a. The phase has a wide distribution, extending across portions of southern Alberta, Saskatchewan, and Manitoba, southward to Montana and Wyoming; it is found as far east as the Missouri River in the Dakotas. Pelican Lake projectile points exhibit a distinctive corner-notched point. They are often found in open, cave and rockshelter sites; in some areas the Pelican Lake peoples relied heavily on Knife River flint as a source material. Defining attributes are the corner notches and sharp points on the blade and base edges, however unnotched points also occur (Frison and Mainfort 1996:23).

Pelican Lake peoples utilized multiple habitat zones in the Northern and Northwestern Plains (Frison and Mainfort 1996:23 after Reeves 1983). Each habitat required an accompanying set of resource utilization schemes, including those particular to faunal exploitation. Prior technologies became more refined. Well researched Pelican Lake sites closest to the study area include a campsite near Toston (24BW182) (Herbort 1988) and a quarry near Three Forks (24BW559)(Davis 1982). At Toston, the faunal re-

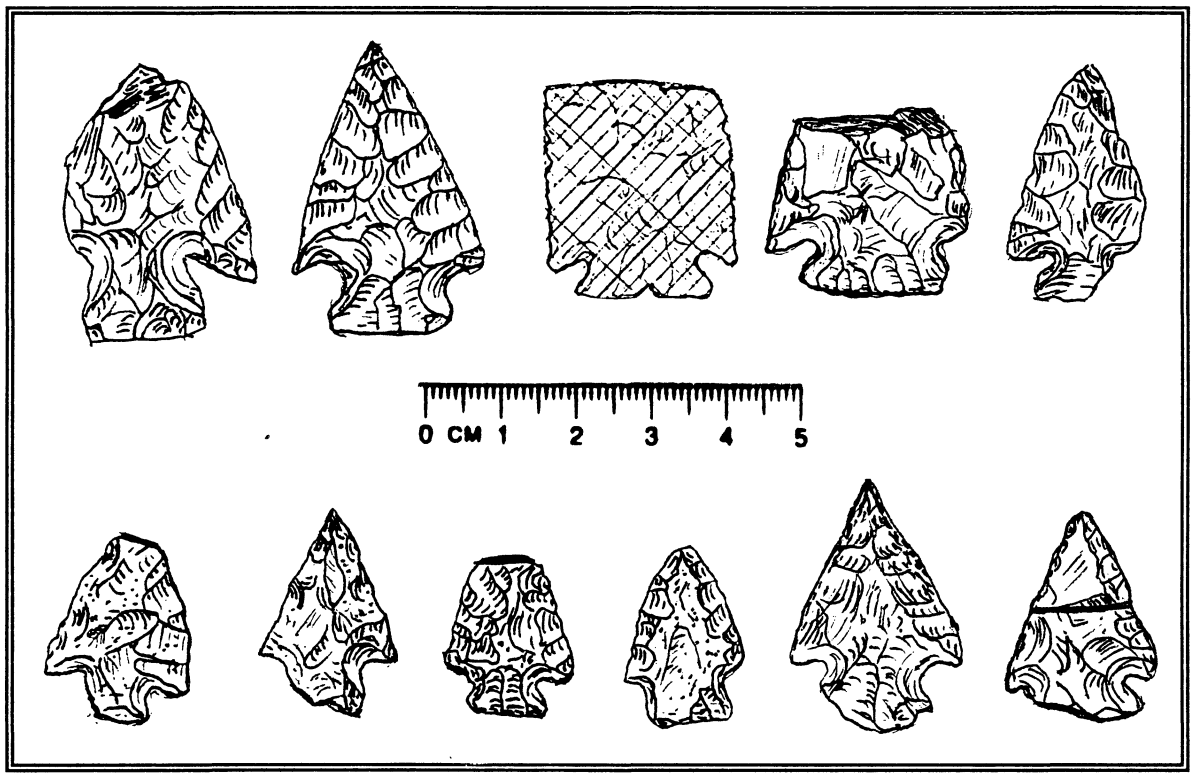


Figure 16. Pelican Lake style projectile points:
a-b 24JF253; c. 24JF961; d. 24JF1579; e. 24JF253; f. 24JF100; g-k. 24JF253;

mains included pronghorn, bison, mollusk, rabbit, and catfish. The Schmitt Quarry near Three Forks was studied extensively by Les Davis. Results of Dr. Davis' work documented seventeen centuries of cultural use; The site is known primarily as a Pelican Lake quarry, or mine; radiocarbon dates place a range of 3300 to 1600 ya. for this site (Frison and Mainfort 1996:23, Greiser 1984:44). Several other Montana sites contain Pelican Lake components, often more than one per site. The Hoffer site (24CH669) may contain as many as nine (Frison and Mainfort 1996: 24, after Davis 1989). At this site on the upper Missouri, bison dominate the faunal assemblage; it also contains lesser amounts of pronghorn, deer, bird, fox, and canids. The Myers-Hindman site (24PA504), also to the southeast of the analysis area, contained a Pelican Lake assemblage which included points, bifaces, bone awls, endscrapers, gravers, and grinding stones, as well as a wide

range of faunal remains (Frison and Mainfort 1996:23). The Flying D Project in Madison County, to the southeast of the study area, uncovered a relative abundance of Pelican Lake indicators (Baumler and Schwab 1993:8-9). Steel's Pass (24MA565) in the nearby Highland Mountains also produced a Pelican Lake assemblage (Davis 1993:58). Cultural sites in the Canyon Ferry and Limestone Hills areas to the northeast are dominated by Pelican Lake period use (Greiser 1984:44).

In the Whitetail Pipestone, six sites bear evidence of possible use by Pelican Lake peoples (Morris 1999, 2000, Morris and Leetz 1998). Particularly, the Werner Collection from 24JF253 contains six representative projectile points. Other sites are more problematic, with data indicating the style in descriptive form only as "corner notched" (24JF100) (24JF603) or "possibly Pelican Lake" (24JF1590). Others contain artifacts that exhibit more definitive characteristics (24JF1579 and 24JF1587). If good stratification is found at 24JF253, some questions on the Pelican Lake variations in this area may be answered.

Besant (2500 y.a. - 1,200 y.a.) . While the dates listed for Besant occupation begin at 2500 y.a., researchers concede that the transition from Pelican Lake to Besant peoples probably was gradual and may have begun as early as 3000 y.a. (Frison and Mainfort 1996:24). Greiser refers to it as a "terminal Middle Period" manifestation (1984:44). Numerous sites with mixed Besant and Pelican Lake assemblages are known. Three such sites may be present within the study area. 24JF253, 24JF1579, and 24JF1590 all contain evidence of the both projectile point styles. This may be a result of contemporaneous use, stratigraphic mixing or subsequent use. These sites should be considered for future research in defining the period(s).

Besant occupation is represented by "large side-notched, dart-type projectile points, plus a few corner-notched points" (Frison 1991:105); the points have bases that are usually straight, with a few either convex or concave. Assemblages include a wide range. Ceramics are associated with Besant manifestations in the Dakotas, the Upper Missouri, and in some Alberta sites (Frison and Mainfort 1996:24). Frison believes that Besant is derived from the technology of the Oxbow complex, and that Pelican Lake resulted from the McKean complex. In this context, he sees that Besant peoples favored the Knife River flint quarries, while Pelican Lake peoples preferred quarries in central and southern Montana, including Yellowstone obsidian. Reeves (Frison and Mainfort 1996: 24) describes the Besant phase as a nomadic hunting/gathering culture, with a distinctive lithic artifact assemblage and regional manifestations. To the east of Montana, the Besant phase includes ceramics, burial mounds, and habitation structures. Deavers'

research (1986:100) suggests a time-span for Besant in the range of 1200 - 2500 y.a. This overlaps with the Avonlea and Pelican Lake phases. The Deavers also find that across the prairies of Montana and Alberta, Old Woman's style arrowpoints replace Besant typology by 1000-1300 B.P.

Frison describes the Besant peoples as "the most sophisticated pedestrian bison hunters to occupy the Northwestern Plains" (Frison and Mainfort 1996:25). He notes that their sites occur throughout the region, illustrated particularly by large communal bison kills on the Powder River, Wind River and Shirley Basin. These peoples constructed large, sophisticated, corral-like, procurement complexes. Several Besant sites have been excavated in northern Montana along the Missouri and Milk River drainages including Wahpa Chu'gn (24HL101) (Ruebelmann 1983:66). Most are associated with buffalo hunting.

So far, most Besant sites mentioned are outside of the "near" range for the Whitetail Pipestone. Closer to the study area, Greiser mentions Besant points as "common in bison kill sites with corrals and pounds...as the Antonson site in Gallatin County" (24GA660) and others in the Limestone Hills (Greiser 1984:44). The Flying D Project in nearby Madison County produced indications of Besant occupation at 24MA1507 and 24MA1574. (Baumler and Schwab 1993:9) as did the Steel's Pass site, relatively close to the study area (Davis 1993:58). As noted above, three sites within the study area *may* contain evidence of Besant occupation.

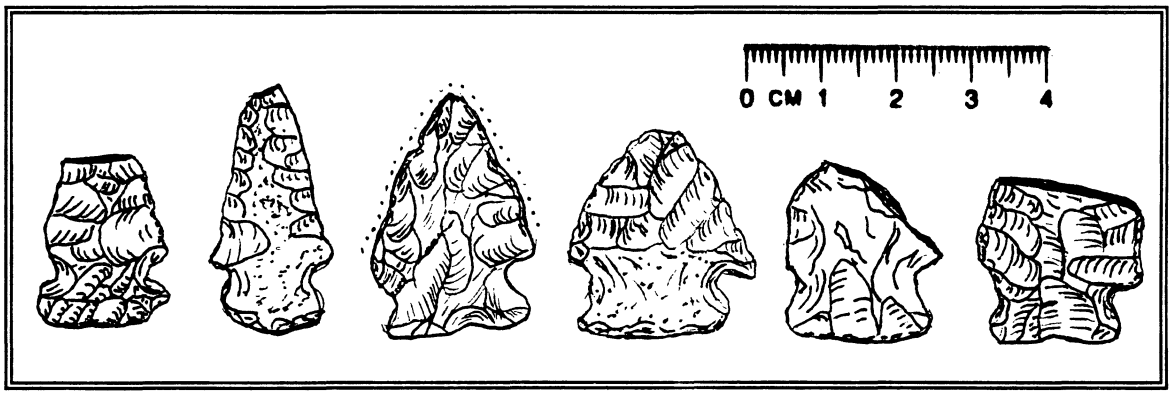
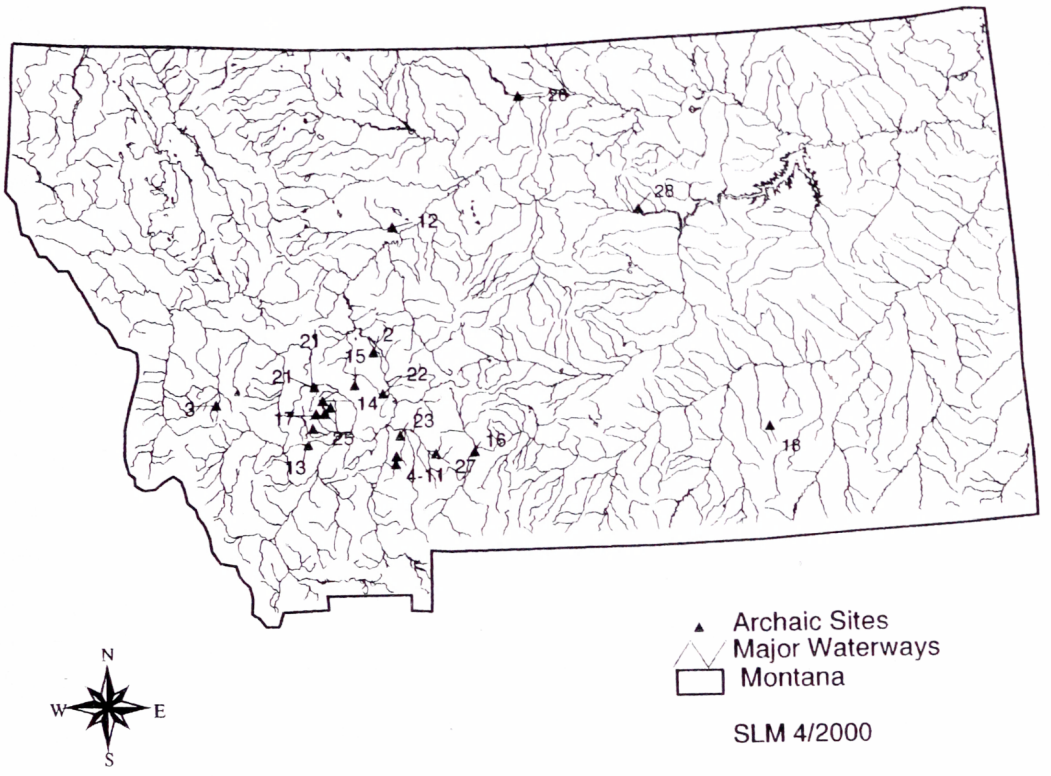


Figure 17. Besant style projectile points: a. isolate; b. 24JF1586; c. 24JF1583; d-e. 24JF253; f. 24JF1590

The foothills/mountain landform of the Whitetail Pipestone lends itself less-well to the large Bison procurement strategies than do the broken plains/foothills just east. This information begs a research question toward the definition of seasonal rounds, as inferred in Frison's 1991 work (see inset above).

Figure 18. Map of selected Archaic Period sites mentioned in the text.



1) Mammoth Meadows; 2) 24BW626 - Indian Creek; 3) Phyllis Lake site; 4-11) 24MA1514 - Cherry Creek Complex, Flying D Sites: 24MA1138, 24MA1531, 24MA1550, 24MA1144, 24MA1501, 24MA1507, 24MA1574; 12) 24CA74 - Sun River; 13) 24MA565 - Steel's Pass; 14) 24JF253 - Lower Whitetail; 15) 24JF1318 Dry Creek; 16) 24PA504 - Meyer's Hindman; 17) 24JF100 - Hartman Creek; 18) 24BH406 - Kobold; 19) 24JF1583 - Lower Bison Skull; 20) 24JF1587 - Lindsay's Site; 21) 24JF961 - Halfway Mine; 22) 24BW182 - Toston; 23) 24BW559 - Schmitt Chert Quarry; 24) 24JF1590 - Grouse Creek; 25) 24JF1579 - Trestle site, 26) 24HL101 - Wah-kpa Chu'gn; 27) 24GA660 Antonsen site; 28) 24CH669 Hoffer Site.

4.1.3 Late Prehistoric (1500 y.a. - 300 y.a. Frison)
Late Prehistoric (1700 y.a. - 200 y.a. Greiser)

The Late Archaic-Late Prehistoric boundary is not well defined, and it appears to overlap in many places...perhaps by a period of a few hundred years. This boundary is marked by a technological transition from the large atlatl and dart points to the smaller (presumably) arrow points about 1500 to 1800 y.a. (Frison and Mainfort 1996:26, Greiser 1984:45, Kehoe 1966:833). Widespread adoption of the bow and arrow brought

concurrent changes in lithic material requirements. Manufacturing techniques are believed to have changed from percussion to pressure flaking, as inferred by the small point size and finer flake attributes (Frison and Mainfort 1996:27). The first manifestation of this change is in the Avonlea complex.

Pottery is another diagnostic characteristic in Late Prehistoric sites; several traditions are represented. Stone circles, stone-filled fire pits, and grinding stone are more numerous in archaeology sites of this period. There is a demonstrable increase in large-scale, communal bison hunting; this hunting strategy is usually represented by "jumps".

Greiser finds the Late Prehistoric Period as the "best represented prehistoric period and least understood" (1984:45), noting that interpretation of sites is more difficult because of climatic changes, population displacements, and mixing of ethnic groups.

Avonlea (A.D. 150-A.D. 1050; or 1850 y.a. - 950 y.a.) The earliest, small, side-notched projectile point complex on the Northwestern Plains is suggested by a radiocarbon date of AD 110 from the Head Smashed-In site (Frison and Mainfort 1996:27 after Reeves 1970). The data place the transition from Pelican Lake to Avonlea at about AD150-250 in Alberta; this is nearly 300 years earlier than dates from southern Montana. Terminal dates for the upper Missouri range about A.D. 900-1000. Avonlea sites are rare in Southern Montana, and where found, exhibit distinct differences from those to the north (Frison and Mainfort 1996:26, after Fredlund 1988 and Fraley 1988).

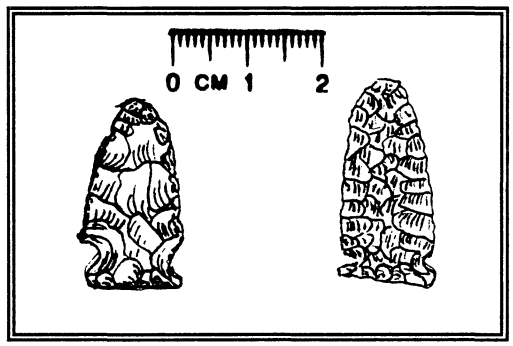


Figure 19. Possible Avonlea projectile Points from 24JF253

The Avonlea projectile points are usually side-notched, with notches close to the base; they are made from high quality materials and display delicate, well-executed flaking and slightly concave bases (Frison and Mainfort 1996:28, Greiser 1984:45). Upslanting side notches are a common variant. The Avonlea typology is distinctive in the fine flaking and thin structure. Ceramics are documented at a number of Avonlea sites (Frison and Mainfort 1996:27 after A. Johnson 1988). Avonlea peoples employed a wide variety of adaptive strategies, but generally focused on communal hunting of upland herd animals, mostly bison (Frison and Mainfort 1996:27). Ulm Piskun (24CA1012) is a large Avonlea bison jump site south of Great Falls, Montana. It contains ceramics, bison and canine bones (Frison and Mainfort 1996:27 after Roll 1992 and Shumate 1967). Other sites on the Montana Highline (24HL101) and the Henry Smith Site (Ruebelmann

1983:68) have included drivelines, tipi rings, cairns, and anthropomorphic petroform features; tools include scrapers, knives, bone choppers, fleschers, perforators, and plain and parallel grooved ceramics; radiocarbon assay of materials from the site yielded dates of A.D. 770-1040. The Lost Terrace site in northern Montana (24CH68) on the Missouri River, indicated heavy utilization of antelope (Frison and Mainfort 1996: 27 after Davis and Fisher 1988, Davis and Fisher n.d.). An Avonlea site on the Mussellshell River (Garfield Ranch) includes the remains of bison, deer, antelope, rabbit, marmot, fish and mollusk, hearths and macrofloral material which dated at A.D. 780. Noteworthy is the mention that Southern Montana Avonlea sites are located on buttes to A.D. 500. (Frison and Mainfort 1996:28) Greiser (1984:45) finds that "Avonlea is primarily concentrated north of the Yellowstone River" in Montana, also noting that the sites furthest to the south and east exhibit the greatest subsistence diversity, while those in the north display a heavy emphasis on bison.

The nearest indication of Avonlea cultural use, relative to the Whitetail Pipestone is two projectile points from the Steel's Pass site (Davis 1993:58). To date, no definitive Avonlea occupational evidence has been found in the study area. Two projectile points from 24JF253 exhibits some Avonlea characteristics.

Old Woman's Phase/Late Plains Side-Notched (1,100 y.a. - 200 y.a.) On the Northwestern Plains, the phase known as Old Woman's or "Late Plains" is more commonly represented in sites and artifacts than any other type (Frison and Mainfort 1996:28-29). This period is generally dated between about 200 and 1,100 years ago. During this time there was considerable movement of ethnic groups; however, ethnic links at sites are still quite elusive. Projectile point styles are variable; all except remnant Besant are small in size; all are believed to be arrow points (Greiser 1984:45). Most are side-notched, but corner, tri-, and unnotched varieties are not uncommon. Frison sees the Late Plains points as overlapping stylistically with Avonlea, and finds that unifacial "thumbnail" endscrapers are phase diagnostic (Frison and Mainfort 1996:28); other researchers note that Avonlea and Late Plains sites co-exist, however rarely (Greiser 1984:47). Late Plains projectile points are sometimes referred to as Prairie Side-Notched or Plains Side-Notched varieties (Greiser 1984:47, Kehoe 1966:833). Like their immediate predecessors, Late Plains peoples also enjoyed a specialized hunting adaptation to large game animals. This was especially true in the uplands; however, some forested sites display very diverse resource utilization strategies (Ruebelman 1983:69). Tipi rings are especially characteristic of this period. Ceramics attributed to Crow, Mandan and Shoshone are all known from Old Woman's Phase sites. Ulm Piskun (24CA1012), south of

Great Falls has Late Prehistoric points belonging to the Old Woman's Phase (Frison and Mainfort 1996:28 after Shumate 1967). Nearer the study area, the Salt Springs site in Broadwater County (24BW552) in the south Elkhorn Mountains contained Intermountain pottery along with tri-notched and side-notched arrow points and a diversity of fauna (Greiser 1984:47). The Steel's Pass site (24MA565) produced an assemblage of Late Plains projectile points in a variety of styles as well as possible Intermountain ware pottery and other (undesignated) pottery. One pot-sherd was dated to A.D. 1290, (or 700 y.a.) (Davis 1993: 58-77). Similarly, a Late Plains level at the Lower Whitetail site (24JF253) in the Whitetail Pipestone contained 3-4 varieties of Late Period arrow points along with Intermountain Pottery and unifacial thumbnail scrapers (Werner 1978; Brumley 1977). As discussed below (see 4.1.5) Intermountain pottery is generally accepted to relate to Shoshonean peoples.

Two other sites in the Whitetail Pipestone contain evidence of Late Prehistoric use (Morris 1999). A single side-notched point was found at the crystal quarry of 24JF1584. A similar point was found at the nearby creek-bottom camp of 24JF1586.

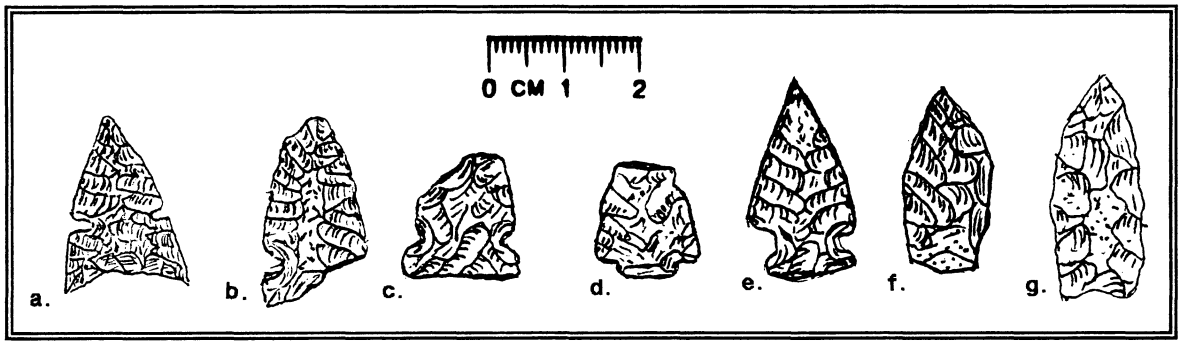


Figure 20. Late Period Projectile points from Whitetail Pipestone sites.
a. 24JF253; b. 24JF1584; c. 24JF253; d. 24JF1586; e-g. 24JF253;

The end of the Late Prehistoric Period is marked by influx of Euro-American goods and concurrent adaptive strategies. The Antonsen Site (24GA660), a late Prehistoric bison kill site in southern Montana, contained tri-notched points in a stratigraphic level "just prior to historic contact" (Greiser 1984:47; Davis and Zeir 1978).

4.1.4 Protohistoric Period (AD 1700 - 1800 Greiser) 200-300 years ago

This Period begins with the first contact, probably indirect, with Europeans. Both French and Spanish claimed the interior of the present-day U.S. in the sixteenth-to-eighteenth centuries. The Verendrye party was probably the first to see land that is now Montana; this event occurred on New Year's day in 1743 (Graves 1994:4-7). English contested the northern boundary in the eighteenth century. Hudson Bay (an English Co.)

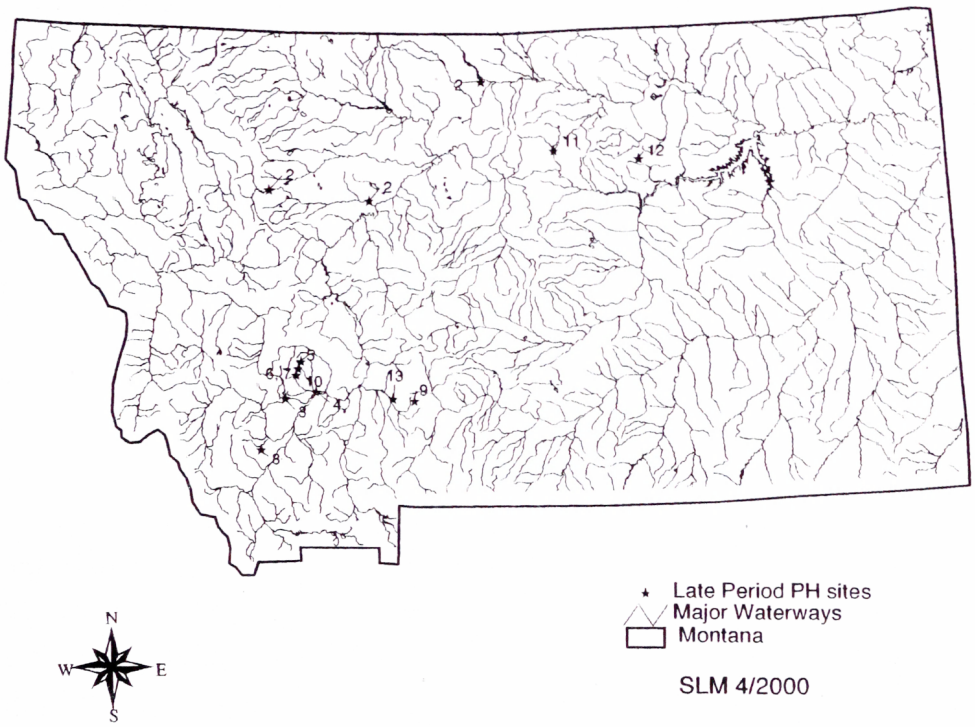
was trading on the Northwestern Plains and in the Rocky Mountains during that time (Frison 1996:35-36).

The earliest known archaeological items of Euro-American origin included horses, trade beads, and small amounts of metal goods; subsequent varieties of glass trade beads and firearms later entered the market (Frison and Mainfort 1996:35-36, Graves 1994:10-11). Two types of Protohistoric metal projectile points are known to exist. The first type are those of European manufacture; the second are those of Indian re-manufacture from European metal (Frison and Mainfort 1996:35-36). Proto-historic sites are usually identified as such, by small amounts of trade goods found (Greiser 1984:48). Very few Protohistoric sites are recorded; this phenomena is likely due to a number of factors, including the relatively short time period involved, epidemics which affected demographics of native peoples, and accelerated movement with horses. The lack of diagnostic materials to identify Protohistoric sites could easily confuse them with similar Late Prehistoric sites without European goods.

The pressures of the Europeans and American from all directions forced changes in the way of life for many Indian tribes. More and more tribes moved westward (onto the Plains); in turn, some Plains occupants retreated westward. The Three Forks area was believed occupied by the Flathead prior to A.D. 1600 (Malone et. al. 1991:15). The Plains cultures became increasingly mobile with the introduction of the horse. Northern Plains Indians such as the Blackfoot, Shoshone and the Crow were skilled horsemen (Ewers 1958:3-19). Northern Shoshonean groups, are believed to have been present in this area prior to 1700. By 1780, the Blackfeet were a dominant force upon the Plains and controlled the area until the mid-1800's when the U.S. Government moved them to the north-central part of the State (Malone et. al. 1991:121). Up until 1800, bands of Shoshone and Salish speakers (Flathead) hunted and may even have wintered near the study area (Greiser 1984:48). By the time Lewis and Clark passed through in 1805, these people were living west of the Divide.

Protohistoric sites in this area would generally date from 1600 through the nineteenth century. Sites are still considered Protohistoric, even though they overlap temporally into the historic period, if they possess attributes of the precontract native lifeways. Some of the late Prehistoric bison, antelope and sheep trap sites, such as LaMarche game trap (24BE1011) not far southwest of the study area, were used during the Protohistoric Period (Keyser 1974).

Figure 21. Map of selected Late Period and/or Protohistoric sites mentioned in the text.



1) 24CA1012 Ulm Pishkin; 2) Montana Highline Sites (Teton, Sun, Marias); 3) 24MA565 - Steel's Pass; 4) 24BW552 Salt Springs Site; 5) 24JF253 Lower Whitetail; 6) 24JF1584 - Crystal Pits Quarry; 7) 24JF1586 2nd Hartman Site; 8) 24BE1011 - LaMarche Game Trap; 9) 24PA504 - Meyer's Hindman; 10) 24JF995 Coyote Rockshelter; 11) 24CH68 - Lost Terrace; 12) Henry Smith; 13) 24GA660 Antonson Site.

4.1.5 Regional Phenomena

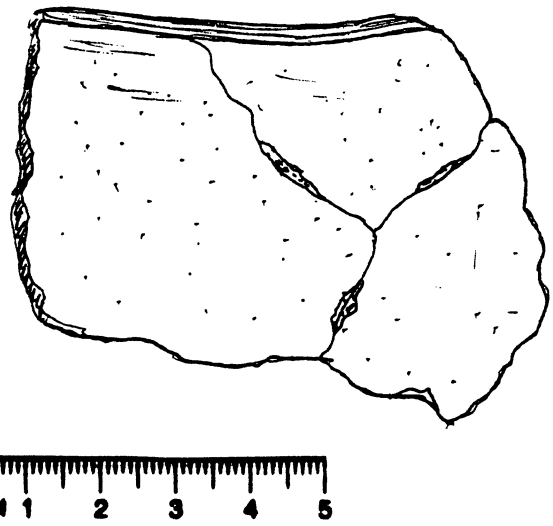
Archaeology site types and site attributes that are somewhat unique and known to concentrate in the Northwest Plains and nearby mountains fall into a few basic categories. These include sites representing the manufacture and use of Intermountain Pottery and Steatite Vessels, those representing communal hunting methods and the use of pounds and traps, sites with stone alignments illustrating various utilitarian and ritual functions and those displaying regional forms of rock art.

Intermountain Pottery (740 y.a. - 270 y.a.) Mulloy (1958) considers Intermountain pottery to be of Shoshonean origin. Malouf (1968) acknowledges the Shoshoni use

of pottery, but also gives credit to other Tribes, including Blackfoot, who could have been responsible for the ceramics. Intermountain vessels generally exhibit a "flower pot" shape with a flanged base and flat bottom (Frison and Mainfort 1996:32 Figure 19b). Some examples have reinforced rims, sometimes combined with prominent shoulders. Decoration is rare and limited to fingernail impressions on shoulders. Vessels are thick, poorly fired and contain tempering materials of unsorted sizes. Surfaces are usually roughly smoothed and large pieces of temper visible. There is evidence that broken vessels have been repaired and reused. The oldest radiocarbon date for this ware is about 740 y.a., which was obtained at the Myers-Hindman site (24PA504) in southwest Montana (Deaver and Deaver 1986:87, Frison and Mainfort 1996:32, after Lahren 1976). Other dates are about 200 years later.

Regarding the occurrence of pottery in a "nomadic" country, Deaver and Deaver (1986:87) postulate that, "like the distribution of ground stone tools, the distribution of ceramics may be a function of either a more sedentary population or of a population using a scheduled seasonal round whereby the same exact localities were reused many times."

Figure 22. Ceramic from 24JF253



Steel's Pass Pottery· A close examination of the four pottery vessels from the Steel's Pass site indicated that they all belong to the same manufacturing tradition; it resembles Intermountain ware, but contains "variations which render it different". This pottery has been carbon dated at ~700 y. a. (Davis 1993:66-79). Davis concluded that "this may be the first time that this type of pottery has been identified. It is similar to, but earlier than, better-known Intermountain Tradition pottery...it is possible that Steel's Pass pottery at other sites has been misidentified." This poses a special question in relation to the pottery at the Lower Whitetail site (24JF253), which was identified nearly 20 years

ago as Intermountain ware (Brumley 1979); perhaps a review of this pottery should again be conducted, in light of the Steel's Pass information.

Steatite Vessels have also been recorded in Plains sites and the historic literature. Malouf's story of the "Shoshonean Migration Northward" (1968:6-7) illustrates the types vessels and sources of steatite, along with convincing evidence that these are of Shoshone origin. One source for steatite, which is a soft chalky, talc-like rock, is believed to be located near Three Forks, Montana. The vessels are usually thick and flat bottomed (Frison and Mainfort 1996:Figure 19, Malouf 1968:6). No steatite has yet been recovered from sites in the Whitetail Pipestone or near vicinity.

Pronghorn and Sheep traps made of logs, rocks or wood such as the cribbed timber LaMarche Game trap (24BE1011) are believed to be of Shoshonean origin (Frison and Mainfort 1996:32-33, Keyser 1974). LaMarche is a good surviving example of the winged log drivelines and the rectangularly constructed "trap." Frison has researched Shoshonean bows of sheep horn, believing them to be an important part of their material culture (Frison and Mainfort 1996:32 after Frison 1980). Probably of Late Prehistoric or early Protohistoric age, some known antelope traps are similar to the LaMarche trap; others are more corral or pound-like. A prerequisite to this method of hunting is the correct landform. Unsuspecting animals must be funneled into the trap. An Absaroka trap site described by Frison includes intermountain ceramics and indicates use for both mountain sheep and bison during the fall and winter; it was dated to about A. D. 1450 (~500 y.a.) (1996:32). No characteristic "traps" have been found in the Whitetail Pipestone, but there is one rockshelter site (24JF995), which is situated in the bottom of a natural "funnel." At this site, game could easily have been driven through the 15' high granite boulder lane and into the natural, boulder impoundment. The rockshelter, is found below an overhanging boulder at the edge of the potential impoundment. It contains remnants of a campfire, a projectile point (Late Prehistoric style), two retouched and utilized primary flakes and a few other flakes (Morris and Leetz 1995).

Wickiups and Stone hunting blinds occur commonly in the Bull Mountains just east of the Whitetail Pipestone (Pallister 1992:33-60). These sites are believed to be of fairly recent, albeit prehistoric or Protohistoric construction. Others, with less density occur in the Highland Mountains to the south, the Sheepshead area to the west, and possibly the Elkhorn Mountains to the north (Morris and Leetz 1997; Werner personal communication 1999). On BLM land within the Whitetail Pipestone management unit, one stacked stone site is recorded at 24JF1578 (Hoff and Sanders 1999). Surprisingly, none have yet been found on the National Forest portion of the Whitetail Pipestone unit.

The lack of this site type on National Forest may be a product of inventory strategy rather than absence of sites; much talus area and upper elevation country has not yet been inventoried. A GIS overlay of the environmental attributes present at this site type could potentially indicate areas of high site probability; this identification strategy warrants further investigation.

Communal Bison Hunting is documented in terminal prehistoric times for Crow, Blackfeet, and Plains Apache (Ewers 1958:12-15, 27; Frison and Mainfort 1996:33). Communal hunting strategies are not limited to bison hunting; however, many of the largest kill-sites are bison oriented. As mentioned above, and in the environmental discussion, certain landforms lend themselves naturally to this practice. While communal hunting is commonly accepted as a Plains strategy, it is not necessarily limited to post-horse acquisition. Two bison jumps with associated stone drivelines (24JF112, 24JF113) are recorded on private land in the eastern portion of the Whitetail Pipestone management area (Sanders and Kuntz 1997).

Stone alignments, cairns, tipi rings and medicine wheels often date to the late prehistoric (Frison and Mainfort 1996:33). These alignments include drivelines and linear arrangements which may also represent trail markers, tipi rings or stone circles assumed to have been used to hold down lodge covers or strengthen the base of a structure. Similar sites include small stone circles, and "U" shaped sites which are probably shamanistic or ritualistic in nature. Medicine wheels or other large stone features are also probably ritual manifestations. Certain landforms lend themselves more readily to this type of site. Often the ritualistic sites are located on prominent hills or knolls or high, isolated vantage points. Two Medicine Wheels well-known on the northern plains are the " Bighorn" in Wyoming and one at Fort Smith on the Crow Reservation (Frison and Mainfort 1996:33); others such as the Sun River Medicine Wheel (Newcomb 1967) and a similar structure near the Teton River (the author, personal observation) are less well understood. To date, stone drivelines, tipi circles and possible vision quest sites have been recorded on BLM lands within the study area (Sanders and Kuntz 1997, Hoff and Sanders 1999); none have yet been located on National Forest.

Pictographs and Rock Art recorded on National Forest lands within the Whitetail Pipestone vicinity include eleven panels of unknown antiquity, which have been painted with a red substance, presumably ochre (Greer and Greer 1996, Morris and Merrell 2000, Morris 2000). The rock art is found primarily on large granite boulders. Sites include 24JF604-605, 24JF961, 24JF1319-1325, 24JF1580-1581. All are concentrated where other evidence of native use occurs. Motifs in the rock art include a bear with

possible lifeline (Figure 23), bear paw, tally marks (finger lines), circles, handprints and abstract anthropomorphic and zoomorphic figures.

No comparative analysis has yet been undertaken regarding the stylistic tradition of the Whitetail pictographs. Many of the motifs are reminiscent of the Central Montana Abstract Rock Art Style (Keyser 1978), which may imply a relationship to Plateau peoples (e.g. Flathead, Salish, Kutenai). The Werner Collection from the Lower Whitetail occupation site (24JF253), which is surrounded by seven of the pictograph panels, contains three pieces of red ochre. The ochre was recovered from levels corresponding with McKean-type artifacts (Werner field notes 24JF253, 6/13/77).

Figure 23. 24JF605 - The Whitetail Bear Pictograph (C. Merrell)

4.1.6 Ethnographic Evidence and Tribal Affiliation

NFMA regulations at 36 CFR 219.24(a)(1) stipulate that cultural resource overviews will include 'data relevant to ethnography.' With this in mind, we must remember that archaeological remains can also belong to some remote ethnic group whom today we can not place with a tribal affiliation. Cultural geography of the Plains before A.D. 1300 is controversial (Deaver 1995:15), with debates often centering on linguistic theory.

Archaeologists look to the ethnographic record for an analogy or explanation of what the material records produces. Commonly they use the "direct historical approach", "ethnographic analogy" and "ethnoarchaeology" in their work (Knight 1989:145). Variations and combinations of these approaches are discussed in Deaver and Deaver (1986:35-37).

Ethnographic analogy has been used to explain rock art and game traps (Knight 1989:146). In some cases of ethnographic analogy, the archaeological phenomena and their ethnographic analogs are connected historically, geographically or both. This can strengthen the interpretation of a site; however, it more commonly provides a plausible

hypothesis to work from. Sometimes ethnographic analogy can be used as a model for behavior, (e.g. settlement, subsistence, or seasonal migration) for explaining the distribution and type of archaeological sites.

The direct historical approach is used when the ethnographic evidence is connected historically to a known group of people. The transition from prehistoric groups to the ancestors of the groups now living in an area is, at best, extremely difficult to trace (Deaver 1995:15).

Ethnoarchaeology treats ethnographic data as a source of hypotheses, an opportunity to observe archaeologically relevant variables at work in a living context (Knight 148), then test the hypothesis or implications against some demonstrable archaeological data (e.g. site patterning etc.).

For the purposes of reviewing the Whitetail Pipestone, I have drawn, in an eclectic and anecdotal way, on the historic record and on prior researchers' work to create a list of Tribes which could have ancestors which inhabited the Whitetail Pipestone at some time in prehistory. Many of the following ethnic groups are known to have traditions that place them as one-time residents of the study area or are among the peoples most commonly encountered here during historic times.

Treaties with Indian Tribes at one time included the study area. When negotiating the Treaties of 1855 in Montana, Territorial Governor Isaac I. Stevens assembled a council with representatives of the Piegan, Blood, Blackfoot-Blackfeet Tribe, Gros Ventre, Flathead, Upper Pend d'Oreille, Kutenai (Salish-Kootenai) and Nez Perce (Knight 1989:156, Malone et. al. 1991:116). The Laramie Treaty of 1851, just four years earlier, had assigned the study area as Blackfeet territory (Ewers 1958:207, Nadeau 1967). Negotiations between tribes during the 1855 session referenced the aboriginal Flathead homelands as lying partly on the east side of the Continental Divide (Knight 1989:156), thus overlapping with the Blackfeet territory. The 1855 treaty reserved certain rights for the Flathead on lands west of the mountains. This treaty land abuts the Whitetail Pipestone at the Divide. During subsequent agreements, the Blackfeet were moved further north (Malone et. al. 1991:121).

The Salish or "Flathead Group" refers to six Salish Tribes that are closely related by language and culture: the Spokan, Kalispel, Pend d'Oreille, Flathead (proper), Salish-Tuna'xe and Semte'use." These people held a widely-respected claim to the portion of our study area lying west of the Continental Divide; they also claimed territory east of the Divide (Knight 1989:155). Deaver (1995:18) accepts the Salish as "among the earliest known Tribes of Montana." Early testimony places the Flathead in western Montana

mountain valleys, from which they frequently journeyed, along with allied tribes, to hunt bison the Plains. Knight (1989:60) sees the Flatheads as embarking on a permanent retreat from the Jefferson River, only shortly before Lewis and Clark met them on the Bitterroot.

Knight makes a strong case for the presence of the Flathead Tribe as early inhabitants of the study area, citing many early ethnographies. He argues that "the original Flathead group was comprised of six bands that ranged from the area of present-day Spokane, Washington to the headwaters of the Musselshell River in Montana" (1989:159). Three of the six tribes lived either partially or totally east of the Continental Divide; Based on Teit (1930:308), these were the Salish-Tuna'xe, the Semte'use, and the Flathead (proper). Tradition places the Semte'use as "inhabitants of the Blackfoot and Deer Lodge valleys, sometimes crossing the mountains to hunt..." The Flathead proper supposedly ranged a triangle-shaped piece of country bounded on the west by the Divide, on the east by the headwaters of the Musselshell and on the south by the sources of the Missouri (Knight 1989:162). This "triangle" encompasses the Whitetail Pipestone analysis area.

As noted above, the Flathead were divided into six bands; according to Knight (1989:162) home locations for are known for four of these. Pertinent to the analysis area, "one had its major camp near the present city of Butte"; one band headquartered "somewhere east of Butte" (Three Forks is speculated). Specifically, the ethnographer, Teit was told that these bands "wintered in definite 'home' localities". In the fair season it seems that most of them, perhaps all, divided into two or more parties, who travelled in different directions from one seasonal ground to another, hunting, root digging, berrying, visiting, and trading. Some of these parties travelled considerable distances on these trips.

Other mention of the Flathead which may be applicable to the study area is that the "Flathead chose to reside in a...diversified country where various habitats could be found - Rocky Mountain outliers and foothills were considered ideal. Such borderlands abounded in big game, especially bison, elk, deer of two kinds, and antelope. Mountain sheep and moose could be found with a minimum of travel. Good shelter, firewood, tipi poles, many edible and medicinal plant species and raw materials of all sorts could be had in the hilly, rocky and wooded surroundings" (Knight 1989:162).

The Shoshone are also generally accepted as prehistoric inhabitants of the study area, although the certainty of how long and during what periods is less substantiated. Historic evidence is provided in accounts by Lewis and Clark (DeVoto 1953:171-172) who list Sacajawea's familiarity with the geography. Keyser (1975) deduced through

rock art studies that motifs common to the Shoshone work are distributed from the Great Basin to Alberta. He also noted that this distribution of rock art shares a common distribution with artifacts, such as Intermountainware Pottery, thought to be of Shoshone origin (Keyser 1975:208-210). Malone (1990:10-11) finds that the Northern Shoshonean groups who had recently acquired the horse expelled the Flathead shortly before 1700, and that by 1780 the Shoshone were driven out by their mortal enemies, the Blackfeet. Malouf (1968) makes a strong case for the "Shoshonean Migrations Northward" across Montana into Alberta and Saskatchewan, using archaeological, ethnographic and historic evidence.

The Blackfeet (Piegan) are also generally accepted to have travelled throughout the study area, though the time-frame for this is also speculative. According to Malone, et. al. (1991:10-11), the Three Forks area was occupied by the Blackfeet, from about 1780 the until the mid-1800's when the U.S. Government moved them to the north-central part of the state. By the time of the Lewis and Clark expedition" the Blackfeet were the military power of the Northwestern Plains...in an area that stretched from the North Saskatchewan River to the Missouri Headwaters" (Ewers 1958:8, 28-30). Numerous place names listed by the Blackfeet include landmarks in the Whitetail Pipestone vicinity (Schultz 1962:369-377), including those referencing the Jefferson River, the Beaverhead River, Boulder River, Bull Mountains, and Three Forks.

The Atsina (Gros Ventre) were relatives of the Arapaho and allies of the Blackfeet Nation (Ferris 1940). They are mentioned by Knight in the ethnographic section of the Helena-Deerlodge Overview, because they were "believed to be late-comers to the Plains...associated with the study area only by their association with the Blackfeet" (Knight 1989:153-154); Ewers, however, places them south of the Missouri, "attempting to make...peace...in order to obtain...horses" from the Crows (1958:45). Some confusion involving this group was perpetuated by the Lewis and Clark Journals when they referred to the Hidatsa as Minnetaree and then to the "Gross Ventre Nation" (DeVoto 1953:59, 60, 63,65, Knight 1989:153) as Mi"nnetaree's of the Plains"; later Lewis used the name Minnetaree in reference to other groups of Indians.

The Plains Cree became involved in the fur trade from its earliest days (Knight 1989:154, Ewers 1958:9). Middlemen in many of the trade operations the Cree bands took up the equestrian lifeways on an intermittent basis. Though their westward course didn't penetrate the Blackfeet country (Knight 1989:154), it is thought that the Cree intermarried heavily with the trappers and traders. Many of the Metis claim Cree ancestry; the Little Shell Band is today centered around Great Falls, Montana. It is not unrealistic

to believe that a Cree presence in the study area during the Protohistoric period as possible.

The Assiniboine are mentioned on the Missouri River by Denig (1961:68), Lowie (1954), and Ewers (1958:22-24), but not often in other historical accounts relative to the study area (Knight 1989:154). Ewers places the Assiniboine, like the Plains Cree, as middlemen in many trade operations, especially in the north.

The Crow are believed (from archaeological evidence) to have been present in northeastern Wyoming and southeastern Montana as early as the fifteenth or sixteenth century (Frison 1991:97). Both Hidatsa and Crow traditions have indicated that the separation did not occur until the late seventeenth or early eighteenth century (Denig 1961:137-138n). It is thought that these peoples they did not often reach as far west as the study area.

The Kiowa are mentioned by Knight (1989:155) based on Mooney (1896:1078-1079) who locates them about the junction of the Jefferson, Madison and Gallatin Forks at the extreme head of the Missouri river, in the neighborhood of Virginia City Montana. Knight cites discussions by other researchers (Grinnell 1961:163) and (Wright 1978) and Jelinek (1967); some of whom provide substantiative evidence for the Kiowa presence, others who refute it.

Nez Perce, though primarily residing west of the Bitterroot Mountains (McLeod and Melton 1986:VII-13), were believed to have allied with the Flathead and possibly the Shoshoni for bison hunting trips to the Plains. This was assumed by early ethnographers to have been a post-horse adaptation (McLeod and Melton 1986:VII-14 after Curtis 1911). As such, they could have travelled through the study area. A natural travelway in the northern portion of the Whitetail Pipestone, between Elk Park and Boulder, Montana bears the name "Nez Perce" Creek. More commonly, we think of the Nez Perce Indians during the 1877 war, as they passed through the Big Hole Valley in their flight from the military pursuers.

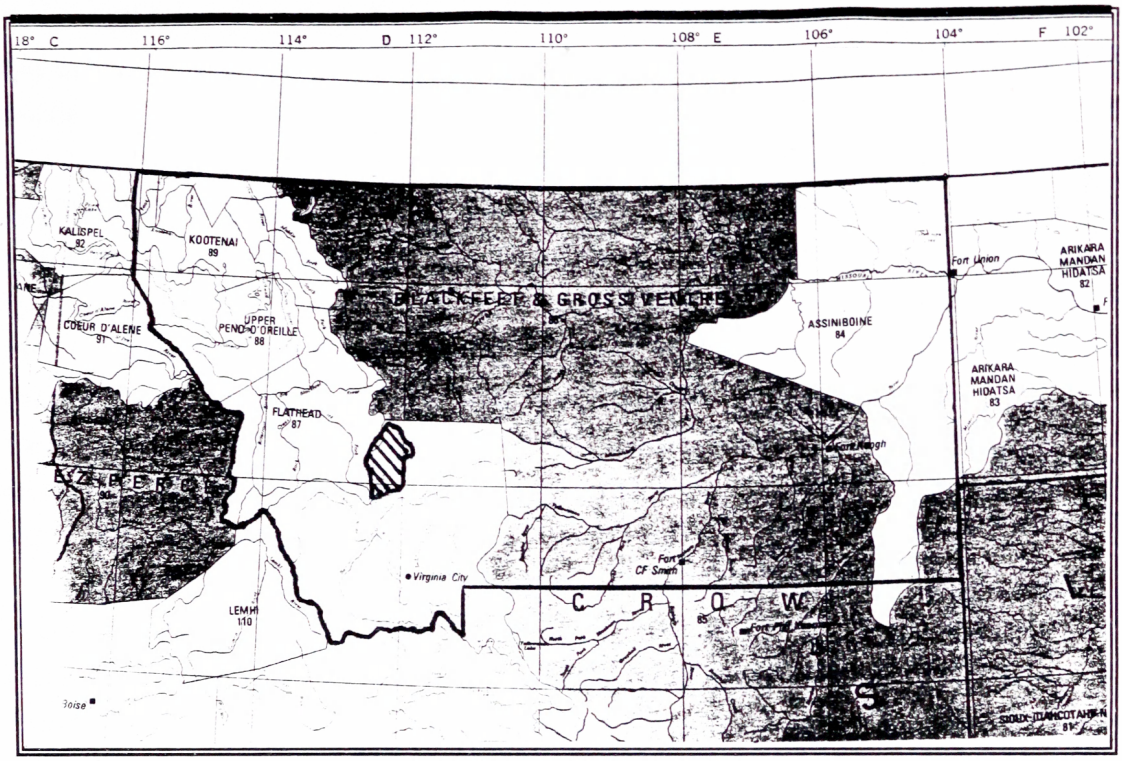


Figure 24. Indian Claims Commission (1978 Map) Study area highlighted

4.1.7 Cultural Prehistory: Avenues for Research and CRM

Many, many research opportunities exist for the modern archaeologist. In addition to those listed in the environmental discussion (Part II), the researcher can utilize expertise in archeomagnetic studies, x-ray florescence, and a host of traditional and newly developing methods. The remains of material culture at archaeology sites offers the scientist a direct link with the people who lived there.

By using Artifact typology and style as temporal indicators, we are employing one of the primary relative dating methods for archaeological material sources. The sketches of local artifacts which have been compared to dated examples indicates the usefulness (however cautionary) of this practice.

Use wear analysis is a highly specialized, but never the less a practical analytical technique for stone tools. It incorporates the use of a high powered microscope and the results of experimental archaeology to produce "types" of wear for given "uses." This analysis is not found as commonly as others in archaeology, which may among other reasons, imply a lack of confidence in the outcome.

CRM managers can collaborate with environmental and geomorphology specialists to build a better understanding of local site formation/deflation factors. Cultural site databases can offer comparative information from nearby sites.

Because peer review is not always conducted for CRM research and documentation, the product is sometimes considered "grey literature" by academicians and scientists. In addition, many agency-driven cultural reviews are exempt from public disclosure, by law, due to the fragile nature of the resource. This prevents much of the information from entering the scientific record, except through certain channels. This lack of communication places a special, and sometimes conflicting burden on the agency CRM specialist. The specialist must take the personal responsibility to produce and submit archaeological research and information to the scientific community for peer review.

4.2 Historic Contexts

Historic sites and post-European material culture is mentioned in this prehistoric overview, because many of the historic period sites overlap geographically with prehistoric ones. Historic use is a cultural factor in site formation (or disturbance) processes, and also evidence of subsequent lifeways and resource utilization. A cursory overview of the historic contexts identified for the Whitetail Pipestone management area will also aid future researchers and managers in visualizing the cultural landscape.

The spatial distribution of sites illustrative of the cultural interaction with the environment, especially during the past 200 years, has left an indelible mark on the landscape of the analysis area. Humans are creatures of habit; they tend to use and choose the same places over and over again, and they often travel the same routes to get from one point to another. It is not unusual to see that many historic facilities and routes overlap with prehistoric sites. In fact, cultural resource managers have come to expect this (SIS 1995).

Historic use in the analysis area concentrated first around exploration and trapping, mainly in the broad, larger and peripheral valley bottoms. A mining boom and early settlement followed, bringing with it commensurate travel and transportation activities, including overland stage, wagon and "toll" roads. Often historic routes followed older Indian trails (Beck 1989:48). The movement of goods, labor, processing, milling and a host of other support services accompanied the mining. The study area contains abundant evidence of both placer and lode (hard-rock) mining; the loosely defined mining districts of Pipestone, Homestake, and State Creek and the more organized Basin Creek District are at least partly encompassed by the Whitetail Pipestone. Larger settlements grew up in support of the mines. Nearby Butte was the hub of mining activity

for decades. Smaller communities at Homestake and Camp Caroline are now "ghost" settlements; some smaller camps have been nearly reduced to historic archaeology sites. As the need for supplies escalated, agriculture sprung up in the valleys and productive lands, bringing with it dairying and hay production, as well as more permanent settlements through homesteading. The higher country provided seasonal grazing and some hay cutting opportunity. Two earthen dams were built to support the agricultural needs; large meadows and former placer operations at the headwaters of the Pipestone and Whitetail Creeks have been inundated. Logging was accomplished to provide fuel to feed the mills, warm the homes, build the railways and shore up the mine tunnels. At one time, the landscape around Butte was almost denuded of timber to provide the necessary wood. The Milwaukee and Northern Pacific Railroads were constructed across the Whitetail Pipestone area during the late 1800's and early 1900's (Beck 1989:32-33) to access the mining hub at Butte. Mining continued into the 20th century replacing the hand-labor operations with larger, industrial-type mines, accompanying mills, smelters and associated technology. Huge granite quarries were located along the railroad to provide building materials for the city of Butte. Mining went through a progression from the search for gold, to silver, then copper and the lesser elements, as ready reserves played out and technology and demand progressed. The wax and wain typical of mining cultures left a trail of evidence in the mountains of this headwaters area. The Depression brought a revival of small-scale gold mining and the movement of people to rural areas in search of subsistence; this was followed by sporadic openings and re-openings of lode mines in the area as metals prices, recovery techniques and mining interests changed. From the early part of the century onward, government agencies, such as the General Land Office, U.S. Forest Service, Bureau of Land Management and others have had a hand in managing the landscape.

Evidence of the many historic activities is abundant in the analysis area. Many of the known sites are linked by the portions of the existing road system, indicating that the roads and trails themselves are historic. Recorded and known historic sites include cabins and placer and lode mines, explorations pits, a mill, mining districts and communities, Forest Service Administrative and Works Project sites, portions of a 3300 acre city park, railroads, railroad construction sites and the ethnic remains of Italian railroad workers camps, stone advertising billboards from the late 1800's and early 1900's, recreation developments at Pipestone and Boulder Hot Springs, neighborhoods of Special Use recreation cabins on land leased from the National Forest, homesteads, hay operations

and dairies, water reservoirs and water delivery systems, logging camps, granite quarries, and ice ponds; the list goes on.

4.2.1 Exploration, Trapping and Trading (Early White influence)

First historical entry in the general vicinity occurred in 1805 when the Lewis and Clark expedition passed through the Jefferson Valley on their westbound journey. Lewis travelled with the boats and Clark travelled overland. Captain Meriwether Lewis traversed the route again on his return trip eastbound in 1806 (DeVoto 1953:170-184). Traders from the North West Fur Co., American Fur Company and Hudson Bay left a number of journals (Graves 1994:7) with well documented accounts of explorations, Indian interaction, rendezvous sites, fur posts and forts. The closest known site is the Three Forks or Fort Henry Post near Three Forks, Montana (Graves 1994:5, Miller and Cohen 1978).

4.2.2 Indian removal and White settlement.

The Blackfeet were given this area in the Laramie Treaty of 1851 (Ewers 1958:207, Nadeau 1967), even though they were not in attendance at treaty negotiations. Additional settlement pressure required further Indian relocation. The 1855 Stevens Treaty moved the Blackfeet further northward, north of the Missouri and Mussellshell Rivers; white settlement expanded onto the prairies, and into the mountains.

The Montana gold rush and ensuing mineral claims took their share of the newly opened country. The strikes at Bannack and Virginia City brought miners from the south. Stock grazing and the open range cattle and sheepmen followed, as did agricultural interests in the fertile valleys. With the completion of the Railroads, more country was settled. Homestead and Mineral Surveys gave land to those who would work it. Soon the railroad sidings at Homestake, Elk Park, Trask, Pipestone and others sprang up. The larger townsites of Butte, Boulder, Basin, Pipestone, Whitehall were established.

4.2.3 Transportation

Roadbuilding and maintenance in the analysis unit began historically with over-land trails and wagon roads during the early mining rush and settlement of the area; other routes sprang up to access homesteads and timber harvest (WP EIS 1998 - Ch. III). The early road system was ad-hoc and utilitarian, usually following the path of least resistance, or shortest distance between two required points; no known formal engineering, military design or maintenance plan is associated with any of the primitive or early historic roads in the analysis unit. The first routes across the Continental Divide probably originated with indigenous peoples (who probably followed animal migration routes). The Pipestone Pass travel corridor is believed to have evolved from one such route. A

wagon road, possibly toll-road or stage route and later an engineered highway (Harding way) replaced the primitive route over the pass. Elk Park Pass and the Boulder River route have undergone similar evolution. Experience has taught us that roads and trails in granitic soils require much higher maintenance and design than those within volcanic geology (WP EIS 1998 - Ch. III).

The Northern Pacific Railway's Logan-Butte line, which meanders through the southern portion of the planning area was completed on March 29,1890 (Taylor 1998:19). The Northern Pacific had completed it's transcontinental link at Gold Creek 1883; the Canadian Pacific Railway to the north in was completed 1885. The Great Northern, which followed the Missouri and Milk Rivers along the Montana Highline to Great Falls was finalized in 1887 (Frison 1996:39); a spur of the Great Northern, the "Montana Central" reached Butte through Elk Park, near the west side of the analysis area; this section was completed in 1888 (Beck 1988:33). Immediately south of the planning unit, the Milwaukee Road was completed in 1909 (Malone et. al. 1991:184) and "electrified" in 1912 (Beck 1988:33). The rail line of primary interest in the Whitetail Pipestone unit is the Northern Pacific. Railroad construction camps and the remains of associated water transportation and logging operations have been identified. Nearly twenty cabinsites and camps which are believed to have originated with Italian railroad workers, are scattered throughout the vicinity (Morris 2000). This ethnic group apparently built beehive-shaped stone ovens as a routine method of cooking, A series of "stone billboards" which advertized along the rail-line(s), "Harding Way" (State Highway 2) and other early routes has also been documented (Taylor 1998:80, Morris and Leetz 1998b).

4.2.4 Mining

Probably the most land-altering historical activity was mining. The first miners crossed the Continental Divide from the Idaho Country and worked the headwaters of the Missouri river (Frison 1996:38) beginning at Alder Gulch, Bannack, Virginia City and points north. By the mid-1860's placer miners were operating in the Butte area. Hydraulic and lode mining, particularly to the south of the planning unit, ensued. Gold mining was predominant during the early pursuits. In 1874, silver was discovered at Butte, and another flurry of prospectors entered the country. During the 1880's and 1890's copper mining was Butte's claim to fame.

Lode gold mining is the most common, historic property type in the planning area; sites and physical remains include prospecting pits, exploratory trenches, mine adits, mine shafts, headframes, miner's cabins and related systems and structures (WP EIS 1998:Ch. III). Numerous mining sites (both placer and lode) have been patented through

Mineral Entry; Mineral Survey patents, more numerous than the homesteads, resulted in private inholdings within the National Forest system.

Mining Districts are historically the socio-political miners' organizations within a given locality. The southern half of the planning unit is part of the Pipestone Historic Mining District (24JF1314) (Sanders 1996). Most of the Pipestone's mining activity occurred during and after the Great Depression of the 1930's, although some initial prospecting and mining did take place during the late 1890's. Similarly, the Homestake District, which includes Camp Caroline, was initiated early, but saw the most activity during the Depression. The Basin Creek Mining District (24JF987), on the northern boundary of the planning unit, centers around the townsite of Basin (Steere 1978). The Basin District includes sites which represent the entire mining process, from placer mining, to ore production, benefication and refinement (GCM Services 1995); most of the exemplary sites are situated north of the Whitetail Pipestone unit, however many small mines overlap into the area. Researchers know less about the Big Foot, or State Creek District on the east of the management unit; presumably, it followed patterns similar to the Homestake and Pipestone districts. An early, Chinese, placer mining complex is situated on private land south and east of Boulder.

Stone quarrying, which took place in support of the construction and mining interests should be mentioned here. The Homestake and Welch granite quarries are both within the planning unit. These sites (records in progress) are magnificent examples of the labor-intensive, engineering feats of the masonry trade. The quarries supplied the city of Butte and surrounding area with cut (and dressed) stone construction material. The granite blocks were hauled by the Northern Pacific Railroad; a short spur ran to the Welch Quarry site (Taylor 1998:62-66). The Homestake quarry is situated adjacent to the tracks. Many of the historic buildings, foundations or retaining structures in Butte are fabricated of granite. Another item of use in the masonry trade, and also the mining business was 'quick lime.' Two known lime production sites are located in or near the planning unit; the Pipestone Pass limekilns provide a good example of dry-laid masonry kilns and associated production system (records in progress); a second and less-well-preserved, set of kilns on "Limekiln Hill", can be found in the north Highland mountains, just south of the Whitetail Pipestone unit.

4.2.5 Logging

The timbered portions of the management area were heavily logged during the late 19th and early 20th centuries (WP EIS 1998:Ch. III). This is evidenced on Forest lands by numerous woodcutter's cabins, and camps, cordwood piles, log decks, loading

platforms, axe-cut stumps, and remnant skid trails. Year-round logging and wood cutting was necessary to satisfy the demand from mining camps, towns, mines and smelters (Beck 1988:57). Also recorded in the adjacent area and overlapping well into the Whitetail Pipestone are the remains of charcoal burning operations. These apparently supplied the smelters in Butte with fuel.

Charcoal production on the Baker Ranch, on Nez Perce Creek in Elk Park was the center of one such operation (24JF1693). An extensive wooden flume system with associated cabins and charcoal firing pits is located on National Forest lands in this vicinity (Morris and Leetz 1999). A second operation, in nearby Sawmill Gulch is overlain by a 1920's Recreation Residence neighborhood (24JF1691). At the burning pits, wood was reduced to the more efficient charcoal by heaping large piles of cordwood, covering it with earth, and firing from within (Gard 1998:10). Charcoal burning pits at the Carlson Ranch near Bernice are well documented with century-old photographs (Beck 1988:43, USDA files).

Cordwood cutting operations throughout the forest were conducted prior to the arrival of the railroads. Once the efficient rail transportation was available, coal became the fuel of choice for heating and smelting. A large woodcutter's camp, with residual stacks of cordwood is known to exist on the east side of the divide above the Camp Caroline area (Morris and Leetz 1997).

Mine timbers, lagging and "stulls," cut from the local area, were used as supports in the underground mines of Butte and the surrounding vicinity. Only during post 1950's era did open pit mining change the need for extensive structural 'timbers'.

4.2.6 Agriculture

Cattlemen and Sheepmen came West to supply the mining communities, the army and railroad workers. These early stockmen operated on a "precarious balance of grass, weather, outside capital and Midwest markets" (Frison and Mainfort 1996:39). Livestock were trailed from points outside of Montana to start businesses within the State. Many experienced the hard winter of 1886 and 1887, which, combined with subsequent drought and overstocked ranges, depleted the range and "broke" many a 'would-be' rancher.

Livestock grazing of the Whitetail Pipestone unit began in the 1890's, initially with limited management. Range condition suffered from intense grazing pressure, depleted grasses and accelerated erosion (WP EIS 1998:Ch. III). Some highcountry areas of the Beaverhead-Deerlodge Forest still display early stock driveways and corral

facilities; none are yet recorded within the analysis unit, but a stockmen's cabin near Whitetail Reservoir may indicate that they exist.

Dairying and hay production dominate the early agricultural interests in the fertile river valleys and high parks of the management area. The Boulder Valley was known as the "dairying district" of the Territory in the 1870's (Beck 1989:34). Hay production was good in most all of the surrounding valleys; Within the management unit a large hay producing operation was located in the Upper Whitetail Park at the turn of the century (records in progress); the land is now inundated with waters held in the Whitetail Reservoir. A complex of fifteen large log buildings, including hay storage sheds and accompanying machinery remain to illustrate this operation. Elk Park, on the west of the analysis unit was also a dairy center; it was populated primarily by Europeans and boasted numerous dairy's (Morris and Leetz 1998b). The large barns are still a familiar sight at many of the ranches.

Dams and irrigation systems to supplement agricultural production were built along small drainages in the Whitetail Pipestone. Two reservoirs with earthen dams hold the headwaters in check for agricultural use. The Whitetail and Delmoe Reservoirs include headgates, ditch systems and caretaker's facilities. Horsedrawn construction equipment remains at the Whitetail reservoir; the dam was permitted by the Forest Service shortly after 1916. Delmoe Dam (24JF996) was constructed around 1913 for the "irrigation of dry bench lands outside of Forest" (Morris and Leetz 1995 after USDA FS files).

Homestead entry was allowed in portions of the Whitetail Pipestone. Private inholdings within the Deerlodge National Forest resulted from this 1900-1918 settlement; these sites usually contain remnants of the improvements, which were required of the homesteaders in order to obtain title to the land. The Caldwell and Gillespie Places provide representative examples of early homestead entry; though, these sites are no longer occupied. Others, primarily in Elk Park, and along Little Whitetail and Pipestone Creeks continue to be used in agricultural enterprise, and have been updated through the years; some of these have been subdivided into smaller parcels for rural living sites.

4.2.7 Industry, Infrastructure and Employment

Early industry and private business ventures are common in the area around the mining hub of Butte. Railroad construction and granite quarries within the management unit employed a large numbers of laborers. Many others worked in jobs which brought electrical and communication service to the mining industry and the accompanying network of cities. The Madison-Butte Power line and Helena and Great Falls-Butte

lines, as well as smaller utility and communication systems, are all part of larger site-system of lines that criss-cross the planning area (McCormick et. al. 1991). While mining, logging and agriculture provided the primary subsistence activities, smaller enterprises, such as the Homestake and Elk Park Ice Ponds and Camp Caroline boarding house also supported families (Bishop 1985, Morris and Leetz 1997). "Trout ponds" on Bison Creek and "health mines" in the Basin vicinity are small, but innovative operations which may have provided income for local residents. Recreation businesses, which capitalized on the natural environment include the developments at Pipestone and Boulder Hot Springs.

4.2.8 Forest Service Administration, Government Programs and the CCC's

Historic Forest Service Ranger Stations and Lookouts are interspersed throughout the planning unit (WP EIS 1998:Ch. III). During the 1920's and 1930's when Ranger Stations were smaller, more remotely located and more numerous, the Whitetail Pipestone had at least eight stations and one lookout. None of the remote sites are in operation today; and few remnants of these sites exist. The larger, and later District compound, in Whitehall (24JF538), which was built by the CCC's in 1938 remains intact and is eligible for the National Register. At present, the District uses it for crew housing, shop and warehouse space; this site is currently under consideration for rehabilitation and reuse again as District headquarters. Remote facilities included Bernice, Sunny Side, Kleinschmidt, Toll Mountain, Homestake, Elk Park and Little Whitetail Ranger Stations. Haystack Lookout, on the ridge between Elk Park and Whitetail Reservoir served as a vantage point for manned fire lookout activities. It was connected via early telephone line to neighboring Ranger Stations (Morris and Leetz 1998). The lookout was burned in the 1980's.

Forest Service work projects sites and spike camps, which were less substantial, are also dispersed throughout the area. The Hartman Creek Administrative Site (24JF960) provides an example; though only cement foundation piers and the water cistern remain.

The government Works Project Administration (WPA) was instrumental in carrying out construction plans for the recreation development in nearby Thompson Park during the 1930's (see Recreation 4.2.9 below). To date, no remains of the WPA or Civilian Conservation Corps (CCC) camps have been found in the analysis area.

4.2.9 Recreation

Recreation was historically a part of the National Forest. While the agency mission of multiple use, was primarily driven by commodity resources, recreation was

present from the beginning. Large establishments at Pipestone and Boulder Hot Springs are located adjacent to Forest lands. More remote National Forest areas saw recreation use in the form of hunting, fishing, and cabinsites. During the 1920's and 1930's the Forest Service leased land to recreationists who sought to build cabins and retreats for themselves. Many of these leases exist today. A tract of eight Special Use Recreation Residences is located on Sawmill Creek to the east of Elk Park. Other special Use cabins resulted from the adaptation of mining-related habitation sites, such as those at the Finn Cabin northeast of Delmoe Lake.

Thompson Park, a 3300 acre city park, on the far southwest edge of the planning unit, was set aside (withdrawn from mineral entry) in 1919 by agreement between the Mayor of Butte and the U.S. Secretary of Agriculture. The Park, complete with plans for ski and bob-sled runs, ampitheatres, picnic and camp grounds and other improvements was designated as the "miner's play area." Most recreation improvements were delayed, in part, because of the Depression; eventually many of the designs were carried out under the workmanship of the WPA. Thompson Park (24SB592) is today under the co-management of the City of Butte and the Butte District of the Beaverhead-Deerlodge National Forest (Morris and Leetz 1997).

The remains of hunting camps, pack trails and other historic National Forest activities which may be related to recreation are scattered across the landscape; physical remnants of these activities are, however, very minimal and not easily interpreted.

4.2.10 Historic Sites: Existing Condition

As noted in the description of each of the contexts, the existing condition of sites ranges from intact structures to total removal. Historic sites such as the Welch Quarry, Northern Pacific Railroad, Madison-Butte power line, Boulder Hot Springs and the Whitehall Ranger Station provide exemplary examples of the past. Some sites, such as the railroad, are significant at more than just the local level. Many of the historic mining sites are in a dilapidated state, partly due to Depression-era scavenging and reuse of construction materials; abandonment and weathering have also contributed to the loss. Some roads and trails have been relocated by subsequent users; others have been abandoned or upgraded to meet contemporary needs. Certain historic uses left less evidence than others; stock grazing, for instance, is not nearly as interpretable across the landscape as is logging. And, while neighborhoods of Special Use Recreation Residences remain intact, the remote Forest Service stations and almost all evidence of them has been removed.

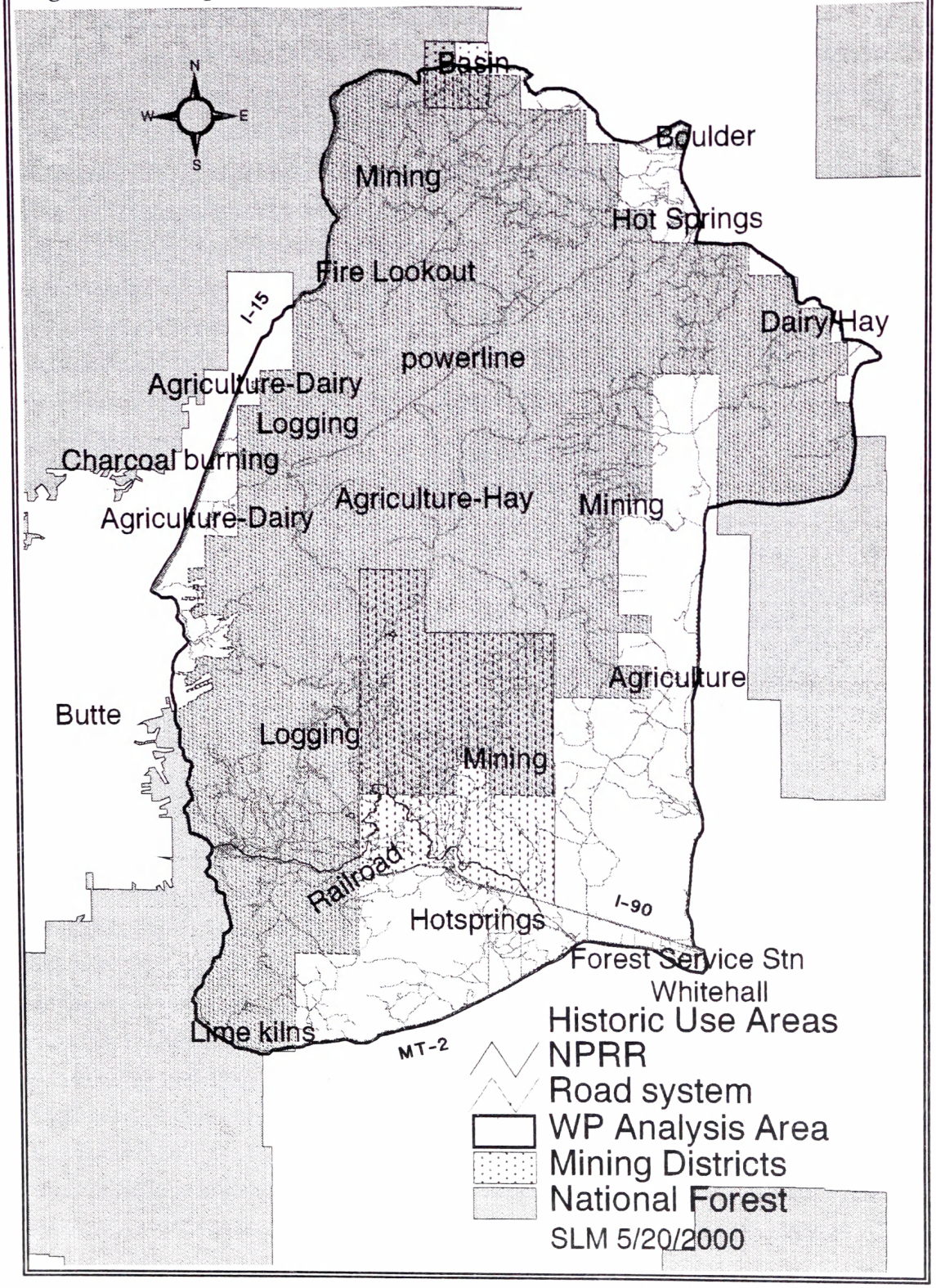
4.2.11 Historic Sites: Avenues for Research and CRM

The historic contexts allude to themes which might later be fleshed out in a Multiple Property Documentation for the Whitetail Pipestone (NRB 16B). This opportunity is ripe. CRM surveys continue to identify new themes and contexts as more of the area inventoried.

Avenues for research into historic contexts and remnant manifestations in the Whitetail Pipestone include such sub-topics as: trapper and trader use, ethnic (Italian, European, Black) association, railroad camps, Depression-era mining, stone advertizing billboards, the dam-building era, high-elevation hay production, methods of industrial stone quarrying, and systems of logging and charcoal production. The list is virtually endless. The Forest Service Passport in Time program is one opportunity to use these research topics for educational public involvement and historic preservation.

One of the "management" dilemmas facing agency Heritage Program personnel is how best to deal with multi-component sites, where the historic component is still being used, and that use may be altering the prehistoric component. For example, historic roads, trails, and recreation sites overlay some known prehistoric occupation areas. This scenario calls for a systematic approach to site evaluation and individual site treatment(s). Designing this approach is the crux of the HPMP, and a question at the forefront of heritage considerations in the Whitetail Pipestone EIS.

Figure 25. Map of selected historic concentration areas mentioned in the text.

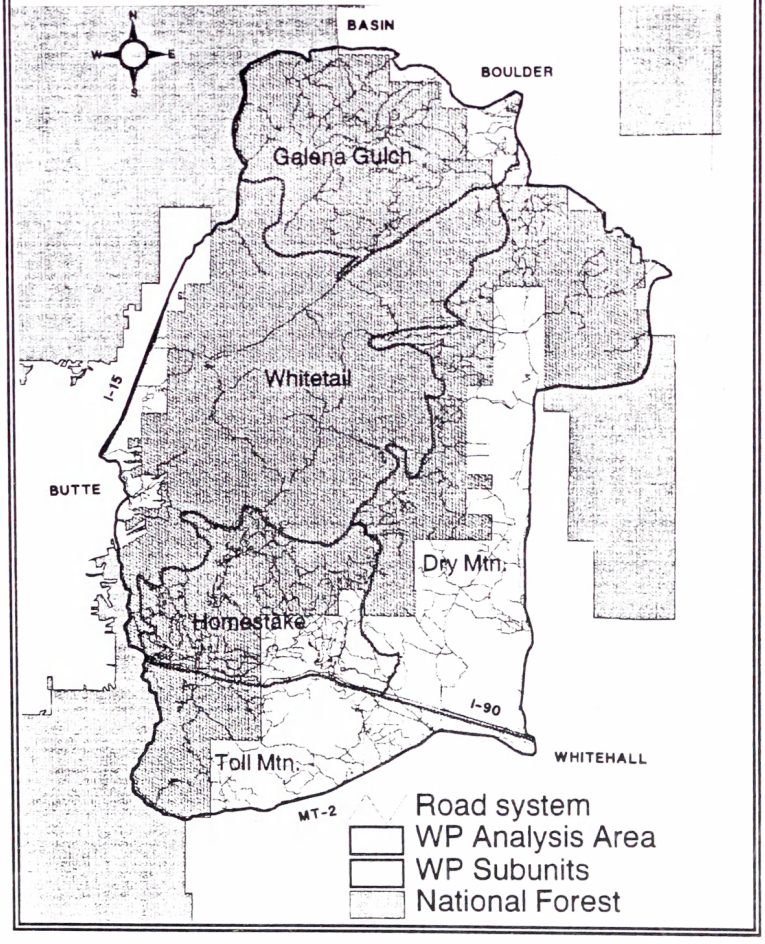


4.3 Contemporary Land Use

4.3.1 Recreation and Transportation

Modern use of the National Forest within the Whitetail Pipestone management unit has shifted largely from resource utilization to recreation activities. The following overview of recreational activities and developments is taken from the currently developing EIS. The Whitetail Pipestone management area is broken down into five sub-units for the purposes of the environmental review (Figure 26). In the following description, I have borrowed the "subunit" methodology, adding only a directional orientation within the larger unit for the reader (WP EIS 1998: Ch. III).

Figure 26. Whitetail Pipestone Analysis - Subunit Boundaries and Road/Trail System



In the *Galena Gulch subunit*, on the north end of the analysis area, off-highway-vehicle (OHV) recreation is increasing in addition to more traditional horseback riding and full size four wheel drive use; recreation peaks during hunting season; and remains the lowest during winter; some snowmobiling takes place, depending on snowfall; there are no ski trails in the north. The Galena Gulch Subunit includes recreation developments at the Elder Creek Picnic area and two trailheads. There are 143 miles of maintained roads and 15 miles of trails in this subunit; the trails are of various classes. Travel routes have some seasonal restrictions due to wildlife security and hunting opportunity considerations. The

sub-unit Includes 12,246 acres of the Whitetail-Haystack Roadless area. The 1999 Presidential Initiative for set-aside of roadless areas may have implications for this area.

The *Whitetail Subunit* on the west, provides the most remote horseback riding and hiking opportunities. OHV activity has increased along with newer trails. The highest recreation use occurs during hunting season. The subunit includes 77,000 acres of roadless area and mostly dispersed camping or recreation activities. The Sawmill Gulch recreation residence tract on the east side of Elk Park lies within this sub-unit. There are no developed ski or snow-mobile trails; some mountain biking is available. Our Lady of the Rockies and the proposed Canada to Mexico Continental Divide National Scenic Trail (CDNST) are larger developments. There are three trailheads, 104 miles of roads, and 22 miles of system trails in this part.

The *Dry Mountain subunit* on the east sees predominantly hunting-oriented recreation; OHVs are used extensively; the geologic anomaly known as "Ringing Rocks" and the Bull Mountain Game Range draw specific recreation interests. There are no developed campgrounds, but dispersed camping is occurring. This subunit includes 205 miles of roads and 5 miles of system trails.

The *Homestake subunit*, in the south-central portion of the analysis area receives the highest recreation use. Most motorized activity occurs here, with the highest use during spring and summer. There are a few marked trails and roads and many user created trails. Seasonal use for big game hunting is heavy. There are limited snow activities, with no marked snow-mobile or ski trails. Mountain biking activity is increasing. Rock climbing is popular; Spire Rock is the primary rock climbing destination. There are two authorized recreation residences in the Finn Cabin area. Special events include poker runs, motorcycle races, trials and competitions. Homestake and Delmoe Lakes are used for camping, picnicking and fishing; these lakes both have developed recreation sites. Other attractions include the Welch Quarry and Marsh Mine, both on private land, and dispersed crystal digging. There is one designated trailhead, near Homestake Lake.

The *Toll Mountain subunit* on the south edge of the analysis area receives light to moderate, dispersed recreation use, primarily for OHV, hunting, firewood gathering, Christmas tree cutting and scenic drives. Some cross-country skiing is available on a single marked trail; there are no snow-mobile routes. One developed campground is located at Toll Mountain. There are no designated trailheads; the subunit has 50 miles of roads and 4 miles of trails.

4.3.2 Agriculture

The Forest Service provides permitted livestock grazing opportunities on nine allotments within the Whitetail Pipestone analysis area. All grazing is designated for cattle and horse. Stockwater improvements and fences are part of the permitted use. Allotment management plans designate anticipated and permitted activities, periods of use, numbers of animals etc.

Whitetail and Delmoe Reservoirs, and the associated dams and ditch systems are permitted to the respective irrigation cooperatives; these are managed by shareholders. Maintenance and contingency plans part of the permits. Smaller scale ditch easements across National Forest lands are held by a number of adjacent landowners with Montana water rights.

4.3.3. Mining and Minerals Exploration

The Forest Service gets a handful of minerals-related requests each year for the Whitetail Pipestone area. These include 'Notices of Intent' or 'Plan of Operations' for small-scale placer or lode mining, and also for crystal mining. Occasionally the plan calls for new access (roadbuilding). Sometimes it allows for a phased approach, based on findings. A reclamation plan accompanies the permitted use. Often miners want to work in old diggings. Occasionally a minerals plan calls for seismic or drill-test work, usually for larger companies. No large mining operations are active in the area; numerous recreation-scale mines are being worked intermittently.

4.3.4 Timber Harvest

No large-scale timber harvest is taking place at this time in the Whitetail Pipestone area. One small winter operation, in units adjacent to the main Homestake-Delmoe road has been sold. The remaining harvest includes personal use firewood and Christmas tree cutting. Private operations are logging adjacent lands. The most recent National Forest timber harvest was accomplished in the Toll Mountain subunit on the south and in the Highland Mountains to the southwest. Recently discovered infestations of Mountain Pine Beetle may require selective tree cutting to abate the outbreak (Ewing personal communication 2000).

4.3.5 Administrative Actions

In addition to land or resource use permitted to others, Forest Service management actions are also occurring in the analysis area. These actions include prescribed fire and riparian recovery programs. Slashing of conifer "encroachment" and subsequent underburn is aimed at reducing fuel loads and increasing wildlife habitat in areas where natural openings are becoming grown in. Riparian stabilization and erosion

recovery is generally accomplished through exclosure fencing and motorized travel restrictions.

4.3.6 Contemporary Land Use: Avenues for Research and CRM

Particular to ongoing contemporary use, cultural resource managers are responsible for identifying and evaluating possible effects to cultural sites from planned or proposed activities. Certain contemporary uses have proven more "intrusive" or impactive and will require commensurately greater consideration through NHPA Section 106 review.

Cultural site monitoring is completed each year by Beaverhead-Deerlodge Heritage Program employees. Previously recorded cultural sites are checked for changes or impacts. If impacts are occurring, we seek to determine the source. Since the recreational use of the Whitetail Pipestone has increased, the sites in the area which are found to be vulnerable (e.g. in or near a 'use' areas) can be targeted for monitoring. If monitoring reveals that contemporary impacts are occurring, measures to avoid impacts are addressed. .

Cultural site formation processes can be identified as part of the monitoring efforts. "Once exposed, archeological components are highly visible and vulnerable to loss through continued geologic activity and the collector" (Frison 1991:19). By undergoing the Environmental review process, CRM specialists have documentary evidence of what activities have occurred, are occurring and are anticipated in the analysis area. This information will aid in interpreting secondary or indirect cultural site formation (or deflation) processes and identify sites which might be at risk to looters or vandals.

NHPA Section 106 review and Section 110 responsibilities are the responsibility of every federal agency. Since most newly proposed activities on National Forest land will trigger Section 106 review, anticipated impacts can be dealt with on a case by case basis. Agency responsibilities under NHPA Section 110 (e.g. inventory which is not 'project' driven) can be furthered by scheduling systematic inventory in areas which are found to be high probability for the location of cultural resources. With a research design in place, the Cultural Resource manager can stratify the area into a high, moderate and low probability rankings for those places most likely to hold sites; by overlying the probability stratification with a layer of areas identified as the most vulnerable to erosion and impacts, the resulting 'critical areas' can be targeted for inventory.

PART V: PATTERNS OF THE PAST
THE NATURE AND DISTRIBUTION OF SITES
IN THE
WHITETAIL - PIPESTONE

All known archaeological information for the Whitetail Pipestone, as of pre-field season 2000 is included in this Overview. In the following section, I've made an attempt to classify the sites and summarize the available data. For sites that I did not personally visit, I am relying solely upon prior, and possibly unstandardized data. In addition, the information is likely biased by the location, quantity and intensity of past inventory coverage.

The first two tables indicate functional or contextual attributes of *all* of the known sites in the analysis area, regardless of land ownership. This is done in an attempt to provide the "bigger picture," since land ownership patterns also reflect certain environmental characteristics. As a generalization, modern land holdings might be stratified into "forested," "grasslands" and agricultural or mineral lands. The "forested" public lands are commonly found under National Forest jurisdiction, the public grasslands under BLM management, and the agricultural and mineral lands in private ownership under either Homestead Entry or Mineral Patent. (See Part 2.1 for additional discussion).

Subsequent to the first two tables, and throughout the remainder of the overview, all compilations and data include *only prehistoric sites which are located on National Forest lands or on private in-holdings within the Forest boundary.*

5.1 Property Types

In reviewing the data on all recorded sites within the management unit, we found nine recorded categories or types of historic sites, plus a category for historic districts. Prehistoric sites were divided into eight categories, plus a category for isolates and another for multicomponent sites. The following sections describe the recorded property types, relative to those culture history contexts outline in Part IV.

5.1.1 Historic sites

There are 170 recorded historic sites in the study area; site density is heavier along travel corridors, in drainage bottoms and closer to communities. Sites are illustrative of the many historic themes and contexts described in Section 4.2 and in the Montana Historic Preservation Plan (Dill and Cornish 1997). For the purposes of this study, historic sites are listed collectively by recorded "site type" and Smithsonian designation in the following table; individual site information is not included. The information in Figure

25 illustrates a relative distribution of these sites. The list of recorded sites is based on a CRIS database search with the State Historic Preservation Office on January 19, 1999.

No estimate of "unrecorded sites" or "site-leads" was made. The Beaverhead-Deerlodge North Zone Heritage Program atlas and site-lead files indicates that many unrecorded sites may exist on National Forest lands. Entries to the atlas and site lead files were made throughout the years from General Land Office (GLO) maps, local informants and field-located, but not-formally-recorded sites. For the purposes of the overview, I drew an arbitrary threshold between those sites with Smithsonian numbers and those without; general trends and themes should still manifest in the historic record. Most of the recorded sites were located during project-oriented, NHPA Section 106 compliance surveys; certain parts of the analysis area are more likely to contain federally funded projects, which creates a bias in data collection methods.

Table 6. **HISTORIC SITES - TYPES AND PERCENTAGES**

Site Type	Site Number 24JF...-	Total	Percent
Agriculture (irrigation, HES)	628, 785, 792, 894, 927, 933, 977, 979, 1200, 1329, 1365, 1522	12	7%
Agency (FS Stn, gov't adm., edu.)	252, 538, 809, 831, 830	5	3%
Transportation (Stage, wagon roads, other roads, railroad)	194, 251, 479, 811, 812, 813, 832, 893, 948, 1315, 1378, 1530, 1550, 1551,	14	8%
Mining (placer and lode, exploration or hydraulic)	155, 159, 163, 176, 178, 179, 180, 181, 183, 185, 186, 187, 188, 189, 195, 196, 197, 198, 199, 230, 267, 268, 290, 445, 447, 448, 513, 514, 515, 516, 517, 519, 521, 522, 731, 732, 782, 787, 860, 862, 912, 956, 957, 958, 959, 961, 964, 971, 987, 996, 1000, 1058, 1080, 1082, 1106, 1119, 1167, 1330, 1352, 1370, 1381, 1382, 1384, 1520, 1521, 1523, 1528, 1531, 1535 1536, 1553,	71	42%
Landscapes/districts (mining)	1314	1	.5%
Historic Habitation (unknown affiliation) or "Historic White site"	58, 60, 94, 95, 96, 97, 98, 99, 115, 154, 156, 157, 158, 161, 164, 165, 166, 167, 168, 174, 175, 182, 190, 191, 192, 193, 200, 231, 242, 436, 440, 445, 446, 498, 626, 629, 717, 733, 952, 962, 976, 978, 999, 1313, 1316, 1317, 1325, 1340, 1349, 1385, 1532, 1533, 1540, 1548, 1596	55	32.5%
Recreation (camps & hot springs.)	497, 733, 855,	3	2%
Industrial (quarry, smelter)	1198, 1390,	2	1%
Logging	160, 162, 627, 788, 805	5	3%
Energy Development (transmission lines)	607, 1554	2	1%
Total Historic Sites		**170**	**100%**

In comparing recorded sites to the historic context outlined in Section 4.2, the following observations were made: There are no early trapping, trading or exploration sites recorded in the Whitetail Pipestone analysis area. Indian removal is not represented, but white settlement is very apparent. Mineral Survey and Homestead Entry are both well represented, with mining-related sites (both placer and lode) dominating the historic era. Logging systems, including camps, woodcutter cabins and associated features are represented, but not in the numbers expected (given the proximity to railroads and industrial hub). Historic "habitation" sites make up the second largest category. It is well-known that habitation or occupation sites do not exist in isolation. A means of subsistence is likely associated with each of these sites, and I suspect mining and logging as the primary associations. The number of recreation-related sites are small, not surprising, given the extractive nature of most sites and proximity to the industrial hub in Butte. Transportation, industrial and infrastructure sites are small in numbers, but make up a greater percentage of site area, primarily because of their linear nature. These include railroads, electrification sites, granite quarries, road systems and related networks.

5.1.2 Prehistoric Sites

Prehistoric sites in the analysis area were almost unknown prior to the 1990s. A total of five sites on National Forest had been recorded prior to 1990 (Knight 1989:Appendix E - p.301). Two more were recorded or reported in the Whitetail Pipestone prior to 1995 (Jackman and Periman 1993, Periman and Leetz 1994). The author began working for the Beaverhead-Deerlodge Forest about the time the Whitetail Pipestone analysis was first conceived of, in the fall of 1995; that year one aboriginal site was identified in the area (Morris and Leetz 1995). During the following three years a number of recreation and trails projects necessitated Section 106 cultural inventory in the analysis unit (Morris and Leetz 1996, 1997, 1998). Survey results indicated that many contemporary and historic trails overlap with prehistoric sites, and that prehistoric sites were becoming exposed as a result of increased trail use. During 1996, eight prehistoric sites were recorded. During 1997, an additional eight were included. In the summer of 1998, with the Whitetail Pipestone analysis pending, additional project, non-project and PIT inventory located and recorded fourteen prehistoric sites. Archaeologists visited, monitored and updated records for the majority of previously recorded prehistoric sites during 1998 and 1999 (Morris 1999, 2000, Morris and Merrell 2000).

At the time of this writing, an estimated six to ten percent of the Forest Service portion of the analysis area has received cultural inventory; to date, this coverage has resulted in 37 recorded prehistoric sites and seven isolated, diagnostic projectile points.

Inventories are concentrated in the Homestake, Delmoe Lake and Spire Rock areas. Prehistoric sites are concentrated in the Spire Rock and Whitetail Creek vicinities. There is tremendous overlap in the contemporary high use areas and that of prehistoric sites. Research is yet to determine if that correlation exists because prehistoric sites are exposed and then identified from intensive use, or if indeed, modern peoples choose the same places as their predecessors. The author hypothesizes that both factors are largely involved.

Methods of "categorizing" or "typing" sites are as varied as the researchers who recorded them. In an effort to explain the prehistoric sites, researchers often begin by labelling them, ultimately inferring a function. There are a number of ways to accomplish this; in reviewing the documents no "standard" method emerged, but many similarities were noted. The following table compares the categories of sites or site attributes, listed by selected researchers working in the region or tracked by cultural resource databases:

Table 7. Site Types and Site Attributes Noted by Southwestern Montana Researchers and Tracked by CRM Databases

Site Category or Site Attribute	McLeod and Melton 1986	Knight 1989	Deaver and Deaver 1986	Foor 1994 (SIMS)	Montana Arch. Records (CRIS)
Ambush - Game Drive					X
Antler/horn artifacts				X	
Bison kill			X		X
Bonebed		X			
Burials	X	X	X		X
Campsites	X				X
Ceramics				X	
Ceremonial			X		
Chipping Station					X
Circular wall or walls					X
Cliff/Bison Jump				X	X
Cordage				X	
Corral/Pound				X	X
Cribbed log occupation					X
Cultural charcoal				X	
Datable artifacts				X	
Eagle catching pit				X	X
Effigy figure				X	
Faunal bone				X	
Fire Hearth		X	X	X	X
Fishing site					X
Fortification sites					X
Glass beads				X	
Ground stone				X	

Site Category or Site Attribute	McLeod and Melton 1986	Knight 1989	Deaver and Deaver 1986	Foor 1994 (SIMS)	Montana Arch. Records (CRIS)
Human Burial				X	
Kill site - Trap					X
Leather				X	
Lithic Scatters	X	X	X		X
Local stone artifact				X	
Lookout					X
Mat/basketry				X	
Medicine Tree				X	
Medicine Wheel				X	X
Metal artifacts				X	
Occupation					X
Ochre/Minerals				X	
Patterned tools				X	
Petroglyph					X
Pictograph					X
Pit houses	X				
Pit or Blind			X		X
Post-holes				X	
Primary flakes/core				X	
Quarries	X	X	X	X	X
Religious	X				
Roasting Pits	X	X		X	X
Rock Art	X	X	X	X	
Rockshelters	X	X	X		X
Scarred Trees	X			X	X
Secondary flakes				X	
Shell				X	
Slab Rock Shelter		X			
Sourceable artifacts				X	
Stone Alignment		X	X	X	X
Stone arc				X	
Stone Cairns	X	X	X	X	X
Stone effigy				X	
Stone circles	X	X	X	X	X
Storage pit				X	
Sweat lodge					X
Trails	X	X	X	X	X
Vision Quest		X		X	X
Wall				X	
Wickiup			X	X	X
Wood Shelter		X			
Wood/cane artifact				X	
Workshop					X

McLeod and Melton in reviewing the Lolo and Bitterroot National Forests (1986:VI-2) listed thirteen site types or categories. Knight, in the Helena-Deerlodge National Forest Overview (1989:301) lists fifteen categories. Deaver and Deaver (1986:72) break down the sites into twenty site and feature categories. Foor's (1994)

database (SIMS) tracks archaeological attributes rather than "site types," 47 in all, plus associated temporal information. The University of Montana Archaeological Records Department (CRIS) codes for 42 prehistoric site attributes. The Montana State Historic Preservation Office also uses this database. This list appears to have been developed based on the submission of records. Both Foor (1994) and Montana Archaeological Records allow four codes per site, thus explaining the differences in the system of tracking attributes versus the labeling of sites by "type." Many of the categories contain overlap (e.g. wood shelter/wickiup or rock art/pictograph), where one may actually be a subset of the other. At a minimum, Table 7 gives an idea of what prehistoric manifestations could exist in the study area and the surrounding region, and what categories we may wish to track in the 'soon-to-be upgraded,' Beaverhead-Deerlodge National Forest database.

In all, I found that researchers adhere to no set standards for the listing of site types. In Table 8 below, I've consolidated the information as the archaeological documentation indicates. *All* prehistoric sites in the analysis unit, regardless of land management, ownership, or jurisdiction, are listed. Where sites were not personally visited by the author, the "site type" is taken directly from the record, and based on the recorders interpretations. Table 8 includes prehistoric sites listed in the CRIS database search of 1/19/99 *and* additional sites identified by agency archaeologists in 1998-1999.

Table 8. Prehistoric site types recorded within the Whitetail Pipestone management unit

Site Type	Site Number	Total	%
Lithic Scatter	73, 80, 100, 108, 139, 173, 178, 199, 243, 300, 603, 699, 752, 803, 804, 839, 840, 841, 843, 844, 856, 858, 859, 861, 863, 864, 964, 1008, 1013, 1312, 1366, 1367, 1368, 1377, 1379, 1380, 1386, 1387, 1388, 1389, 1390, 1391, 1539, 1545, 1549, 1593, 1639, 1640	48	52.5%
Bison Kill (jump)	112, 113	2	2%
Tipi Ring (stone circle)	291, 980, 1022	3	3.5%
Surface lithic quarry	888, 1347, 1348, 1584, 1588	5	5.5%
Paleo-Isolate	727, 728, 1346,	3	3.5%
Campsite (lithics and hearths - composite)	72, 253, 1543, 1544, 1546, 1547, 1579, 1582, 1583, 1585, 1586, 1587, 1589, 1590,	14	15.5%
Workshop (chipping station)	172, 729, 1331,	3	3.5%
Rockshelter	71, 995	2	2%
Pictograph (rock art)	604, 605, 961, 1319, 1320, 1321, 1322, 1323, 1324, 1580, 1581	11	12%
Multicomponent	172, 173, 717, 728, 803, 961, 964, 1312, 1367, 1379, 1388, 1579	12 (dup.)	
Total Prehistoric Sites	(not including duplicates in multicomponent)	**91**	**100%**

Over one third of the recorded sites in the Whitetail Pipestone are prehistoric. While the record indicates that only 12 overlap with historic sites, monitoring has demonstrated that the actual number is much greater (Morris and Merrell 2000). Over half of the sites are classified as lithic scatters. Campsites, containing a combination of lithics and hearths, are the second-highest represented site. Pictographs are also well represented. Surface lithic quarries rank fourth. The remainder of site types make up a very small percentage of the prehistoric sites.

5.2 Chronological or Temporal Evidence for Prehistoric Sites

Sites from all periods of prehistory are present within or very near to the Whitetail Pipestone analysis area. As reviewed in Part IV, initial placement of these sites into a chronological sequence is often accomplished by artifact typology. In the last decade, we have added considerably to this database. The following summary outlines the state of knowledge regarding the temporal aspects of the Whitetail Pipestone area prior to the current overview.

A*n Overview* of the *Cultural Prehistory* for the Deerlodge National Forest, provided by George Knight in 1989, reviewed "chronologically sensitive artifacts" located in the vicinity (p. 103). Noted was a possible Paleoindian component at 24PW268 (to the northwest of the Whitetail Pipestone). "24JF284 yielded a biface midsection showing parallel transverse flaking." A Middle-Archaic component at an unrecorded site in Madison County, was represented by a projectile point base that, "looks 4000 B.P." Late Archaic components were counted at 24PW268, 24GN24, 24JF603. One of these is within the study area (24JF603). Knight felt that the Hell's Canyon site (24MA565), 20 miles to the south, "was probably used periodically from the Middle Archaic onward, and perhaps from even earlier." He summarized the known cultural components in table format (Knight 1989, Table 8-2:102), concluding that the Deerlodge National Forest contained one possible Paleoindian component, no Early Archaic sites, one possible Middle Archaic, three Late Archaic and one Late Prehistoric period site.

5.2.1 Relative Dating: Projectile Points as Indicators of "Time"

All site forms and artifacts from National Forest sites and inventories within the Whitetail Pipestone management unit were reviewed for relative dating possibilities. By comparing typological and stylistic attributes of diagnostic projectile points and tools with those presented by Frison (1991:15-137) and Greiser (1984:35-46), relative dates were obtained for roughly forty percent of the Whitetail Pipestone National Forest sites. The following table lists each site, by Smithsonian designation, with associated temporal components as indicated by artifact types.

Table 9.

TEMPORAL INDICATIONS AND OBSIDIAN SOURCE DATA
BEAVERHEAD-DEERLODGE NATIONAL FOREST
WHITETAIL PIPESTONE MANAGEMENT AREA CULTURAL SITES

Time Periods →	Paleo Period	Early Archaic	Middle Archaic	Late Archaic	Late Pre Historic	Proto Historic	Artifact typology	Dates	Sourced
Age Range B.P. →	11,500 8000	8000 to 3500	4000 to 3000	3000 to 1000	1500 to 300	300 to contact	After Frison 1996 & Greiser 1984	Obsidian or ^{14}C	Obsidian Trace Element
Site No ↓									
24JF100				X			Pelican Lake		
				X			Besant or Yonkee		
24JF253	X						Late Paleo		
		X					Oxbow		
			X				McKean Complex	8160 B.P.*	
			X				Duncan	5896 B.P.	
			X				Duncan	4670 B.P.	
			X				Hanna	2972 B.P.	
				X			Yonkee		
				X			Pelican Lake		
				X			Besant		
					X		OldWoman's		
					X		Late Plains side		
					X		Late Plains corner		
					X		Late Plains triangle		
					X		Avonlea (possible)		
24JF603				X			"corner notch" (?)*		
					X		"side notched" (?)*		

Time Periods →	Paleo Period	Early Archaic	Middle Archaic	Late Archaic	Late Pre Historic	Proto Historic	Artifact typology	Dates	Sourced
Age Range B.P. →	11,500 8000	8000 to 3500	4000 to 3000	3000 to 1000	1500 to 300	300 to contact	After Frison 1996 & Greiser 1984	Obsidian or ^{14}C	Obsidian Trace Element
Site No ↓									
24JF604							N/A		
24JF605							N/A		
24JF843							N/A		
24JF961				X			Yonkee		
24JF964							N/A		
24JF995				X			Besant		
24JF1319							N/A		
24JF1320							N/A		
24JF1321							N/A		
24JF1322							N/A		
24JF1324							N/A		
24JF1331							N/A		
24JF1539							N/A		
24JF1543							N/A		
24JF1544							N/A		
24JF1545							N/A		
24JF1546			X		X		McKean Complex Late Plains corner		Obsidian Cliff Bear Gulch
24JF1547							N/A		
24JF1549							N/A		
24JF1579				X X			Besant Pelican Lake		
24JF1580							N/A		
24JF1581							N/A		

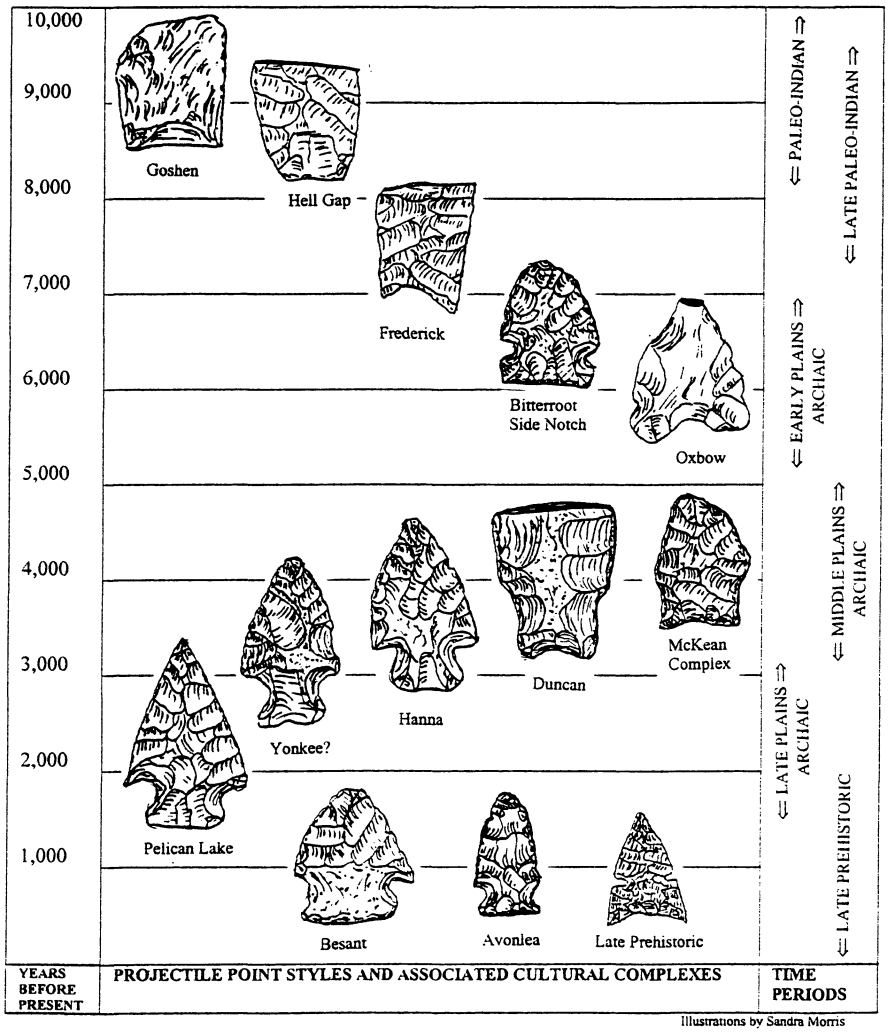
Time Periods →	Paleo Period	Early Archaic	Middle Archaic	Late Archaic	Late Pre Historic	Proto Historic	Artifact typology	Dates	Sourced
Age Range B.P. →	11,500 8000	8000 to 3500	4000 to 3000	3000 to 1000	1500 to 300	300 to contact	After Frison 1996 & Greiser 1984	Obsidian or ^{14}C	Obsidian Trace Element
Site No ↓									
24JF1582							N/A		
24JF1583			X	X			Yonkee or Hanna		Bear Gulch
24JF1584					X		Late Plains side		
24JF1585					X		Prairie side notch		
24JF1586			X	X	X		Late Plains side Besant Duncan		
24JF1587				X X			Yonkee Pelican Lake		
24JF1588							N/A		
24JF1589			X	X			Hanna Yonkee		Bear Gulch
24JF1590				X			Besant or P-Lake		
24JF1593	X	X		X			Possible Cody Early Archaic Yonkee		
24JF1639							N/A		
24JF1640							N/A		

Time Periods →	Paleo Period	Early Archaic	Middle Archaic	Late Archaic	Late Pre Historic	Proto Historic	Artifact typology	Dates	Sourced
Age Range B.P. →	**11,500 8000**	**8000 to 3500**	**4000 to 3000**	**3000 to 1000**	**1500 to 300**	**300 to contact**	**After Frison 1996 & Greiser 1984**	**Obsidian or ^{14}C**	**Obsidian Trace Element**
Isolates ↓									
97-7-2 IF1				X			Yonkee		
97-7-2 IF3		X					Oxbow		
97-7-6 IF1					X		Late Plains		Bear Gulch
98-7-3 IF2			X				McKean Complex		
98-7-3 IF1					X		Prairie side notch		
98-7-3 IF6			X				Hanna		Obsidian Cliff
98-7- 3 IF5			X				Hanna/McKean		

Date range estimated in years before present (B.P.). Period terminology based on Frison and Mainfort (1996)
* - surface find - date considered "unreliable" (Werner personal communication 1999)
(?)* - artifacts unavailable for viewing - information from old site form

The record indicates artifacts representing all prehistoric periods except Early Paleo and Protohistoric are found in the study area. The Archaic Period is best represented, and the late Prehistoric Period ranks second. Indicators of Paleo use are present, but less substantiated. The following numbers indicate individual sites or site components found in the study area for the various Periods of prehistory: two (2) Late-Paleo, three (3) Early Archaic, nine (9) Middle Archaic, thirteen (13) Late Archaic, and eight (8) Late Prehistoric. Particular phases or complexes represented in the Whitetail Pipestone material include: Late Paleo (Foothill-Mountain, resembling Goshen, Hell Gap, Agate Basin or Cody-Complex), Oxbow, McKean Complex (including McKean, Duncan, and Hanna), Yonkee, Pelican Lake, Besant, Old Woman's, Avonlea and Late Plains or Prairie side and corner notched and triangle points. The following chart, similar to that used regionally (See Part IV: Figure 5) is based on review of the Werner Collection for the Lower Whitetail site (24JF253).

Figure 27. Relative Cultural Chronology at the Lower Whitetail Site (24JF253)



5.2.2 Absolute Dates

As illustrated in Table 9, very few absolute dates have been obtained for cultural materials in the analysis area. The obsidian hydration dating from site 24JF253 substantiates stylistic indications of Archaic Period use. Further analysis in absolute dating is warranted. Many of the area's projectile points are obsidian. Cross-dating on these artifacts is recommended.

5.2.3 Relative and Absolute Dates: A Summary

Information from relative and absolute dating indicates the Archaic Period as producing the most sites and artifacts within the Whitetail Pipestone. Sites ranging from between ~8000 and ~1000 years ago form the primary portion of the archaeological record. Site numbers peak during the later part of the Archaic Period, and taper off in either direction.

5.3 Functional Evidence and Inferences

Knight compared the known sites on the Helena and Deerlodge National Forests for functional evidence during the dual-Forest overview in 1989 (Table 8-2 and p. 101-102). Half of the recorded sites were classified as lithic scatters (n=21), five (5) were stone circles, two (2) rockshelters with habitation fill, two (2) rock shelters with pictographs, two (2) hearths or roasting pits, two (2) stone cairns or piles, one (1) timbered lodge, one (1) vision quest structure and three (3) "other" sites. The "other" category is comprised of two isolated finds (24JF106 and 24JF282) and a shelter made of rock slabs (24JF84). Two sites are classified as wooden shelters (24PW25 and 24JF60). One site (24JF297) is a human burial.

In reviewing cultural sites in the Little Belt Mountains, the author found research methods used by Ruebelmann (1983:44-46) and Taylor (1984:Appendix A, p.1-19) useful in developing a cursory site function inference (Morris 1994:17-18). A similar method is described below and illustrated in Table 10 for sites in the analysis area.

5.3.1 Functional Site Types

Sites in the research area were classified into five functional categories, determined by the presence or absence of features, artifacts and other cultural materials listed on the site records or available information. These five types of *prehistoric* sites or components only and include:

1) Habitation (or residential) = H;
2) Subsistence (food procurement) = S;
3) Industrial (lithic procurement) = I;
4) Ritual (cognitive/ideological or ceremonial) = R; and
5) Other (not falling into the above categories = O; as defined below.

Many of these site types occur in conjunction with each other; they are often distributed in relation to landform environmental attributes and vegetation (Ruebelmann 1983:44).

Habitation sites (H) are characterized by the presence of cultural features and material which indicate a variety of everyday domestic activities occurring in a campsite setting. Debris scatters which include discarded tools and artifacts, fire cracked rock, lithic debitage, bone waste, hearths or tipi rings indicate habitation sites. Ruebelmann (1983:46) found this type of site tended to be situated on higher ground relative to the surrounding terrain, near a water source and outside of dense vertical vegetation.

Subsistence - food procurement sites (S) are indicated by cultural features representing task-specific subsistence (food production) activities, such as hunting, fishing or collecting plants. In the Whitetail Pipestone, these may include bison jumps, pounds, or drive-lines and associated bone-beds and possibly boiling pits or camas digging areas with associated roasting pits. Artifacts may include projectile points, knives, choppers, and other primary butchering tools or digging tools. Ruebelmann found these sites to be typical of breaks, bluffs and natural wildlife gathering grounds which would serve as features to assist hunting activities (1983:46-47); subsistence sites would also be found around meadows where freshly gathered camas could be processed (Malouf 1971:41-43).

Industrial - lithic procurement sites (I) are those where only specific technological tasks were performed. These include quarrying for stone tool material and workshops or chipping stations for fabrication of tools or trade items. In this area, such sites may be represented by dense scatters of nondiagnostic lithic debitage, cores, hammer stones, roughed-out blanks, antler knapping tools and unmodified chunks of raw material. Features may include quarrying pits. Sites may be located most anywhere; Ruebelmann found them most often adjacent to habitation sites (1983:46). Industrial sites can often be indicated by such natural features as knapable stone outcrops (Flenniken 1996:1-3).

Ritual, ideological or ceremonial sites (R) are characterized by a variety of features which suggest use in ceremonies, social events, and other ideological or political activities. These sites are indicated by the presence of burials, petroglyphs or pictographs, boulder effigies, unusual rock structures (e.g. medicine wheels) and very small or very large stone circles which may have special functions. Features may include a combination of stone and wood indicating the remains of sweat lodges, eagle catching pits, or vision quest structures (Ruebelmann 1983:45). The distribution of ritual sites would be varied, but often can be related to topographic features such as mountain peaks,

rock-shelters and cliff faces. In the Whitetail Pipestone the large, overhanging boulders are of particular interest.

Other or Miscellaneous sites (O) reflect linear features, such as trails, lookout sites, rifle pits or others not attributable to one of the other classifications.

Table 10.
FUNCTIONAL CLASSIFICATION, ENVIRONMENTAL SETTING AND SIZE OF PREHISTORIC SITES: WHITETAIL - PIPESTONE

Site Number	Description./Type	Class	Setting	Site Size
24JF100	Campsite	H	Riparian - Stream terrace	4800 m^2
24JF253	Campsite, possible butchering (large bones), pottery with nearby rock art	H/S/R	Stream terrace	16,800 m^2
24JF603	Campsite	H	Perennial Spring site	n.d m^2
24JF604	Pictograph	R	Boulder rock shelter upland	324 m^2
24JF605	Pictograph	R/H	Boulders associated with terrace campsite	100 m^2
24JF843	Campsite - possible workshop	H/I	Riparian - stream terrace near lithic source	est. 2400 m^2
24JF961	Pictograph - projectile point	R/O	Boulders on stream terrace	14,400 m^2
24JF964	Lithic scatter - dispersed	I	Upland, probably related to nearby campsite or lithic source	7200 m^2
24JF995	Short term Campsite w/possible hunting catchment area	H/S	Upland, boulders, rock-shelter w/natural game pound	150 m^2
24JF1319	Pictograph	R	Boulders upland	100 m^2
24JF1320	Pictograph / possible association with nearby campsite	R/H	Boulders on stream terrace	100 m^2
24JF1321	Pictograph / possible association with nearby campsite	R/H	Boulders on stream terrace	288 m^2
24JF1322	Pictograph / possible association with nearby campsite	R/H	Boulders on stream terrace	400 m^2
24JF1324	Pictograph / possible association with nearby campsite	R	Upland dry site	100 m^2
24JF1331	Chipping station Work-shop & possible camp	I/H	Upland spring	30,000 m^2
24JF1539	Chipping station and possible camp	I/H	Upland spring	4800 m^2
24JF1543	Campsite	H	Creek terrace	4800 m^2

Site Number	Description./Type	Class	Setting	Site Size
24JF1544	Chipping station and possible camp	I/H	Creek terrace - local quarry nearby	400 m^2
24JF1545	Lithic scatter - possible camp	H	Creek terrace	400 m^2
24JF1546	Campsite	H	Creek terrace	15,000 m^2
24JF1547	Lithic scatter - probable camp or workshop	H/I	Creek terrace - local material source nearby	405 m^2
24JF1549	Lithic scatter -	H	Creek terrace	80 m^2
24JF1579	Campsite	H	Alluvial Fan, Creek terrace - pictograph about 1/8 mile away.	7000 m^2
24JF1580	Pictograph	R	Boulder shelter, upland, but with campsite about 1/8 mile away.	100 m^2
24JF1581	Pictograph / possible association with nearby campsite	R/H	Boulders above stream terrace	100 m^2
24JF1582	Campsite - possible subsistence kill, faunal material, bison skull nearby	H/S	Stream terrace confluence	3600 m^2
24JF1583	Campsite - possible food processing, groundstone present - possible evidence of fish utilization	H/S	Stream terrace/confluence	2800 m^2
24JF1584	Crystal Quarry	I	Upland above small stream in pegmatite outcrop	1200 m^2
24JF1585	Campsite	H	Stream terrace - local lithic source nearby	4500 m^2
24JF1586	Campsite - possible chipping station	H/I	Stream bench - lithic source nearby	500 m^2
24JF1587	Campsite - possible workshop	H/I	Stream terrace, alluvial fan below spring & lithic source	1600 m^2
24JF1588	Crystal Quarry	I	Upland spring in pegmatite outcrop	1600 m^2
24JF1589	Campsite	H	Stream terrace	6600 m^2
24JF1590	Transient campsite	H	Stream terrace	3600 m^2
24JF1593	Campsite - possible workshop	H/I	Sloping stream terrace, near lithic source	1200 m^2
24JF1639	Campsite, Lithic Scatter	H	Stream terrace	300 m^2
24JF1640	Campsite, Lithic Scatter	H	Alluvial Fan	800 m^2

Classification Legend: H = Habitation; S = Subsistence; R = Ritual; I = Industrial; O = Other

Table 11. Percentage of Sites by Functional Category

The following table lists totals and percentages from the Site Classification Table above.

Site Type	Total Recorded	Percent of Total
Habitation sites	12	32.5%
Procurement (food source) sites	0	0%
Industrial sites	3	8.1%
Ritual Sites	4	10.8%
Travelways/0ther	0	0%
Mixed - Habitation, Subsistence, Ritual	1	2.7%
Mixed - Habitation, Ritual	5	13.5%
Mixed - Habitation, Industrial	8	21.6%
Mixed - Habitation, Subsistence	3	8.1%
Mixed - Ritual and Other	1	2.7%
TOTAL	**37**	**100%**

Twenty nine sites have attributes which classify them as habitation or occupation areas; most sites are small, probably representing transient camps which were set up in conjunction with another activity. Seventeen habitation sites have another function or activity attributable. This includes eight which are related to lithic procurement or tool manufacturing, four which have evidence of food production or processing and six which have pictographs within very close range of the campsites. Three sites are judged as primarily industrial in nature, two as quarrying areas and one as a lithic reduction workshop. Four rock art sites were found in isolation; the remainder were within close proximity of campsites.

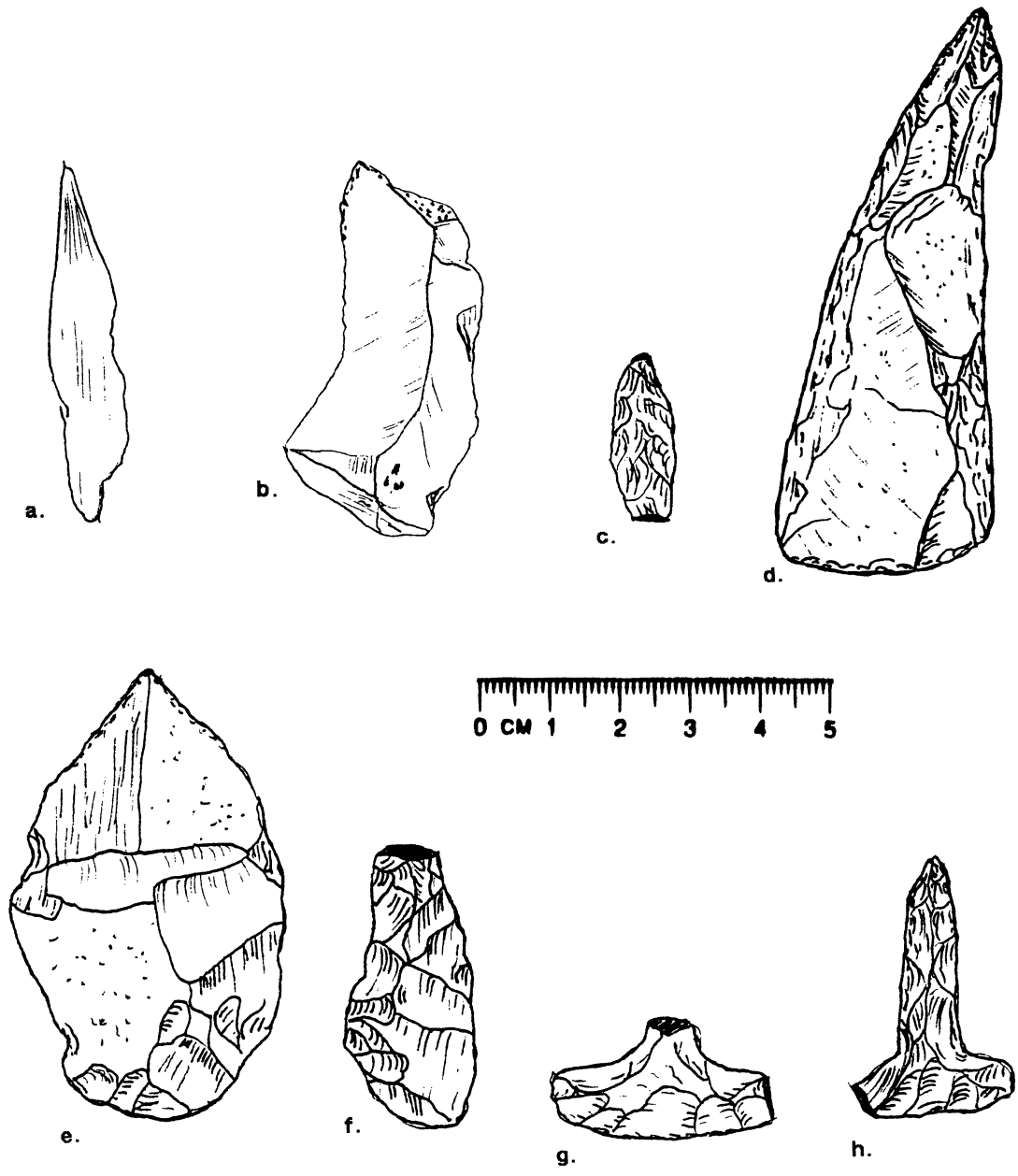
5.3.2 Other Inferences: Tools as Indicators of Function

Subsistence strategy. Overall, the site distribution indicates that of a seasonal round where small groups stayed intermittently (and perhaps repeatedly) at creek-side camps near to the source of lithic materials, hunting grounds and perhaps food gathering areas. Their choice of camping location was usually an open-air site near a creek confluence or at a freshwater source; rock shelters were also utilized.

Tools as indicators of function. Functional indicators in the lithic collection point primarily to various domestic and hunting activities; ritual use is also possible. Numerous hide scrapers, awls, a Teshoa knife and other knives indicate hide working and primary or secondary butchering. Ground stone implements point to plant processing as well as possible hide working and other grinding activities. Fire cracked rock (FCR) illustrates use for cooking and heating, possibly including meat drying or meat and hide smoking. FCR could also indicate heat treatment for lithic materials; however most locally available lithic sources are of volcanic origin, and would not be heat-treated (Flenniken personal communication 1996). The numerous projectile points show primary use

in hunting and meat procurement. Pottery in the archaeological record is generally accepted as indicating a more sedentary, and domestic lifestyle and a later period of use. Ochre has a variety of uses, including both ritual and utilitarian; one known use of ochre in the project area is pigment for pictographs.

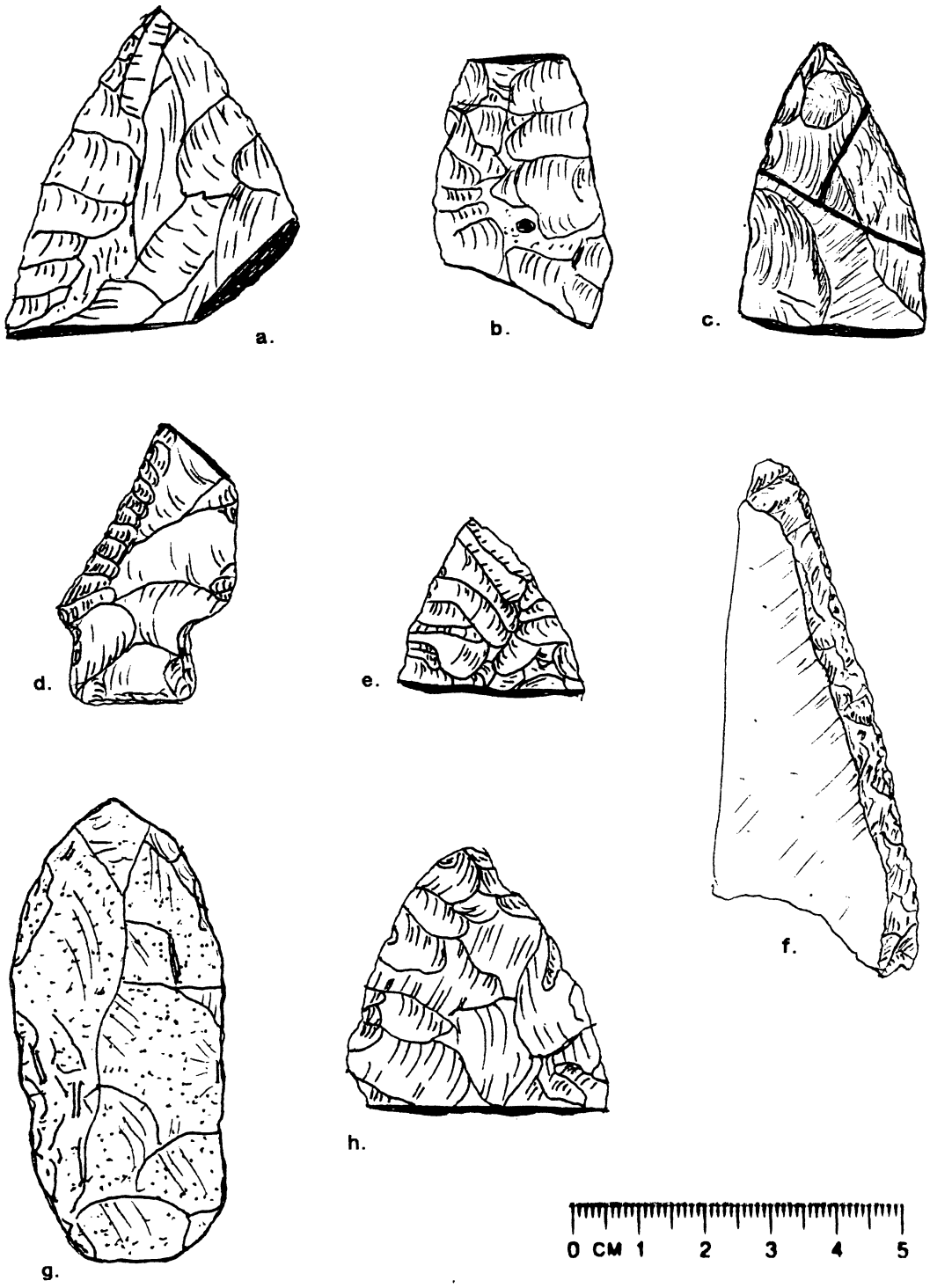
Figure 28. Stone and Bone Implements: Indicators of Site Function from the Analysis Area Piercing and etching tools: Awls, drills, and burins



a. 24JF253; b. 24JF1579; c. 24JF253; d-e. 24JF100; f. 24JF1590; g. 24JF1579; h. 24JF253

S Morris

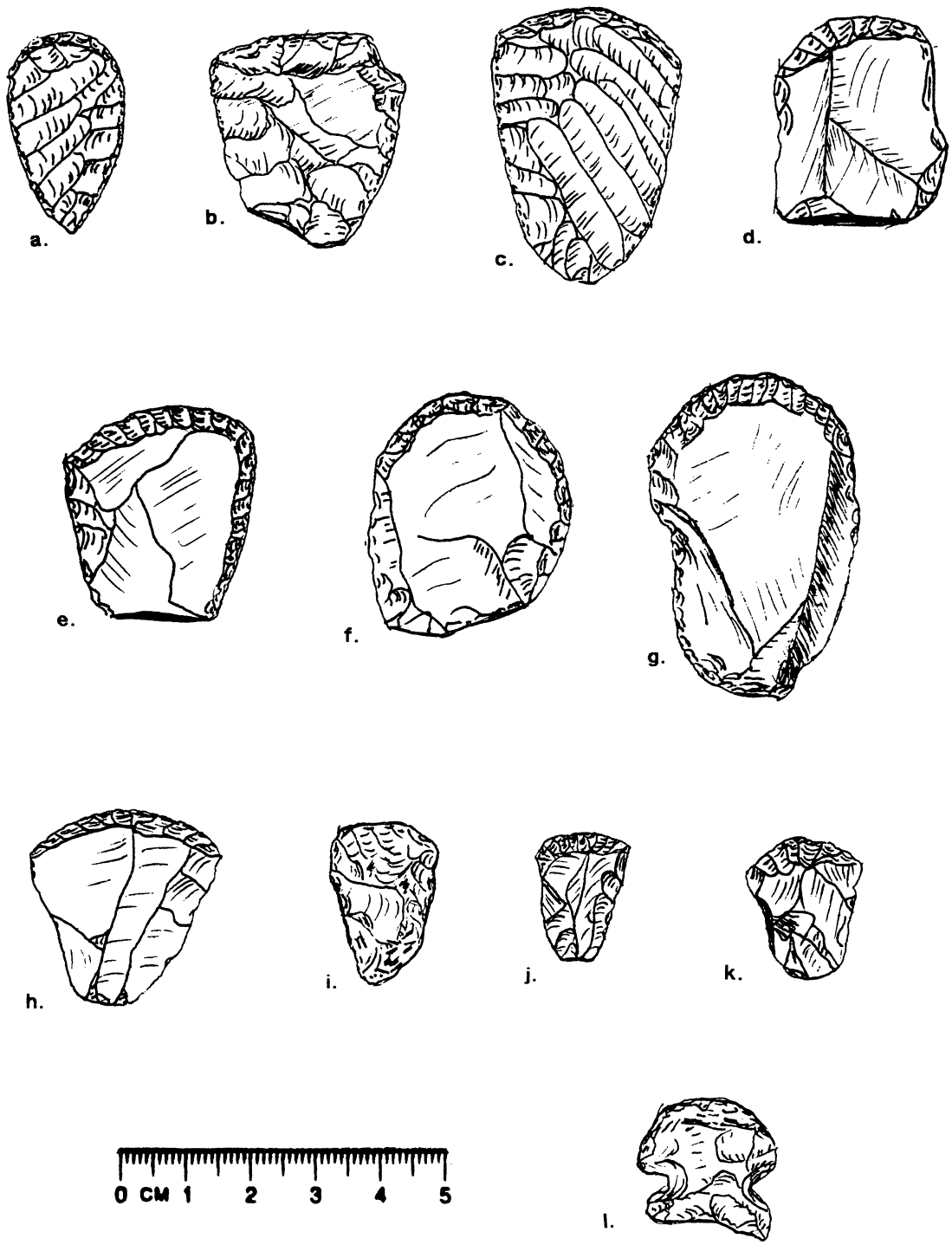
Figure 29. Stone Implements: Indicators of Site Function from the Analysis Area
Cutting Tools: Knives and Utilized Preforms



a. 24JF253; b. 24JF1584; c. 24JF1583; d. 24JF1593; e. 25JF253; f. 24JF1579; g-h. 24JF253

S. Morris

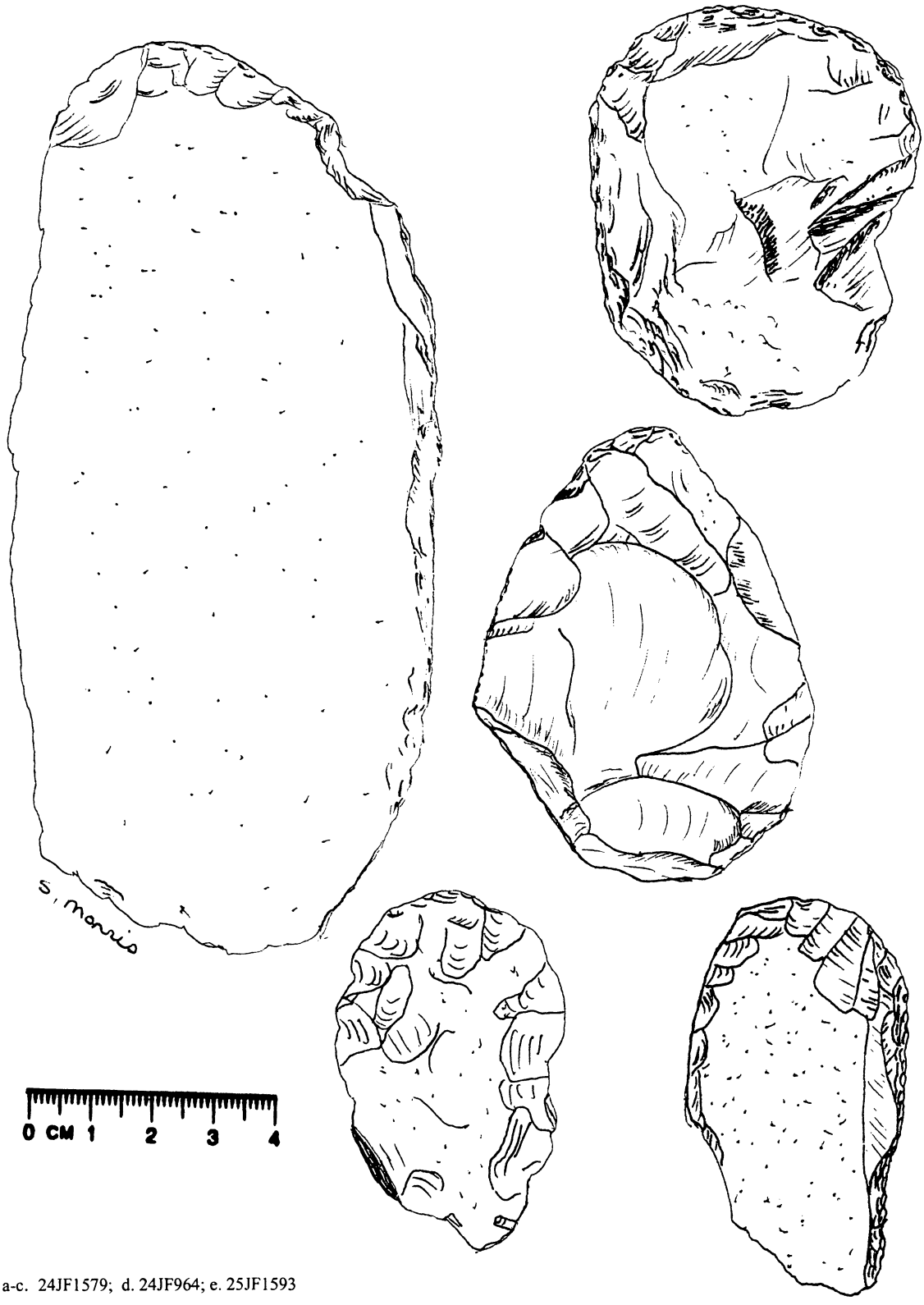
Figure 30. Stone Implements: Indicators of Site Function from the Analysis Area
Scraping and Fleshing tools: Patterned End Scrapers and Hafted Scraper



a. 24JF253; b. 24JF1579; c-f. 24JF253; g. 24JF1585; h. 24JF253; i. 24JF1589; j-k. 24JF253; l. 24JF1573

S. Morris

Figure 31. Stone Implements: Indicators of Site Function from the Analysis Area
Chopping, digging, hidebreaking and fleshing tools:
Battered Cobbles and Retouched or Marginally Flaked Lithics



a-c. 24JF1579; d. 24JF964; e. 25JF1593

5.4 Ethnographic and Direct Historical Evidence for Tribal Associations

Historic documentary evidence indicates prehistoric use in the project area by the predecessors of at least four currently recognized Tribal groups. Historic period occupation by the Blackfeet, Shoshone, Flathead, and possibly Nez Perce is found in first-hand history sources (Nadeau 1967, DeVoto 1953, Flathead Treaty 1855, Indian Claims Commission 1978).

The Whitetail Pipestone is on the eastern boundary of Flathead Treaty land. To the west of the Divide, the Flathead people gave up land, and reserved certain hunting, gathering and grazing rights. Those rights exist to this day (Flathead Treaty 1855). According to the Indian Claims Commission (1978), the Whitetail Pipestone lies within an area where multiple tribes claimed ownership, but no Tribe was given sole rights. (See Figure 24; Section 4.1.6).

Ethnographic evidence for southwest Montana was reviewed by Knight (1989:145-162) and Deaver and Deaver (1986:35-48). This evidence supports historic documentation and further adds possibilities of area use by ancestors of the Kiowa, Crow and Assiniboine Tribes (for discussion see "Ethnographic Evidence" Section 4.1.6).

5.5 Environmental Evidence (ecofacts)

5.5.1 Faunal Studies

Faunal analysis was conducted at Steel's Pass prehistoric site (24MA565), which has similar land form and environmental attributes to that of the Lower Whitetail (24JF253) in the analysis area. Steel's Pass yielded a multiple and diverse vertebrate collection/assemblage of faunal materials. Culturally associated fauna at 24MA565 were deer, antelope, bison, bighorn sheep, porcupine, mountain goat, elk, grizzly bear, mountain lion, fox and grouse. Some smaller mammals, such as porcupine, hare and rabbit were found less frequently. Others such as squirrel and pack rat were present, but regarded as "intrusive" rather than cultural (Davis 1983:48). Davis concluded that "the variety of large and small game animals, carnivores, furbearers and grouse reflect the extensive exploitation of the surrounding ecosystem through time." Faunal analysis also found a heavy degree of bone fragmentation, indicating that "site occupants made maximum use of procured game species." At Steel's Pass, the cultural use of mammal bones was found in a variety of "polished, intentionally shaped working ends of bone perforators or awls" (Davis 1983:48).

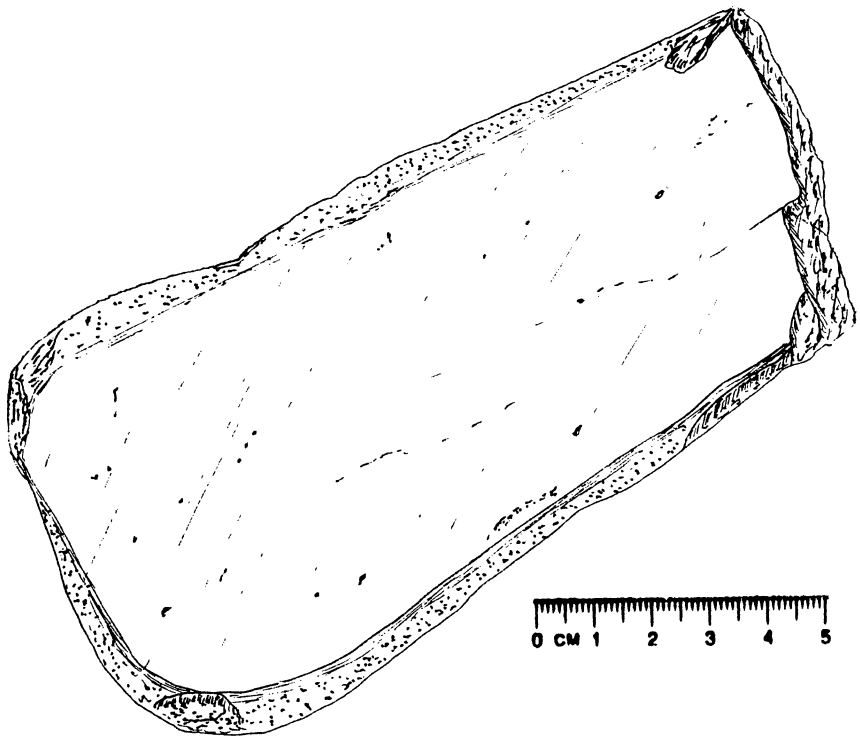
Similar analysis undertaken for faunal materials at 24JF253, the Lower Whitetail site (Greiser 1999), yielded data regarding species found, species by depth of excavation and some statements on "seasonality and butchering." The collection from 24JF253

included deer, pronghorn, elk, bison and beaver. It was absent of rodents or bird remains. Possible bison fetal bones indicated fall or early winter use of "level three" (5" - 7" below surface). All of the animals, with the exception of beaver were also found at the Steel's Pass site. Greiser's statements regarding the collection were as follows (1999:2):

> ...a larger sample, further research and comparison are warranted. The varieties of large and medium game animals and furbearers indicate knowledge and moderate exploitation of the surrounding environment through time. The degree to which most bones are fragmented indicates that the occupants made fairly complete use of the faunal resources they had available....in addition to fragmentation, there is some bone that tis either burned or calcined, indicating at least short-term camping. Presence of a bone awl and the projectile point and point bases suggest one or more occupations over a long enough period of time to perform maintenance activities. The exfoliated bone indicates that one or more occupation levels or portions of levels were exposed for extended periods of time...limited mineralization...suggests extended exposure to highly mineralized ground water or substantial age of the sampled levels.

Protein Residue analysis was undertaken on groundstones from the Lower Bison Skull site (24JF1583). The tests yielded positive results to "catfish antiserum, which "may represent processing of a native member of...catfish, carps and minnows...or suckers" (Cummings and Puseman 1995:3). Fish belonging to this family are present today in some streams within the management unit (see Section 2.4.1).

Figure 32. Ground stone (#1) from 24JF1583



5.5.2 Botanical Studies

Pollen and opal phytolith or starch granule studies were conducted on two ground-stone implements from the Lower Bison Skull site (24JF1583) in 1995 (Cummings and Puseman). The site is located on a large terrace adjacent to Whitetail Creek. It is found in the mountainous region on the upper east side of the analysis unit. Results indicated a regional environment dominated by pine, sage, grasses, and forbs, much the same as it is today. Interpretation of the results suggests both groundstones may have been used for "grinding grass seeds." Pollen preservation varied from good to poor and the two grinding surfaces exhibited "very different" pollen results. One stone was dominated by pine pollen, "probably representing local or regional pine trees" and included juniper, shrubs, forbs and grasses of sage, sunflower, pinks and grass families. The other was dominated by pine, but contained higher levels of the "sage" family pollen and included the others as well. The grass pollen was denser on the first stone. The first stone also yielded positive results in the protein residue tests (see 5.5.1 and Figure 32). Results of pollen, starch granule and protein residue analysis, however, were termed "inconclusive" by the analysis team, since the tools had been washed prior to submission and because no comparative soil samples were available (Cummings and Puseman 1995:4).

5.6 Spatial Distribution

Site types and spatial distribution are useful for investigating research questions on prehistoric adaptation and preference, and for indicating areas where cultural resource managers may want to concentrate additional research efforts. Our small data-set of sites and lack of intensive inventory has not yet yielded a sufficient sample to make relevant statistical correlations. Instead, what it offers is a baseline of information to build upon. We entered the data into electronic geographic information system (GIS) format to display known sites and site-clusters and to compare this data with other resource layers. Available layers for environmental attributes (water, landform etc.) and contemporary activities (e.g. roads, range, timber harvest etc.) facilitated an array of questions in the analysis and helped to make inferences and possible correlations regarding resource and habitat preferences as noted in the overview. These inferences would theoretically translate to areas of high site density and vise-versa. Projected high density or "high probability" areas may require special management considerations, including priority status for inventory. GIS overlays can also indicate locations where cultural sites might be vulnerable to impact (e.g. roads, stockwater developments etc.).

During the exercise of creating maps for the overview, fields and tables to accommodate pertinent archaeological information were built into the cultural resource GIS layer. Table 6 illustrates historic themes in the area. Tables 8, 9 and 10 contain the distribution of prehistoric sites by function, antiquity and setting. Sections 5.6.1 - 5.6.3 below provide a narrative of the cursory observations resulting from interpretation of data. Graphics and maps resulting from the GIS overlay can be found throughout the report as Figures 1, 2, 4, 9, 18, 21, 25 and 26.

5.6.1 Site Density and Site Size

Site density is often correlated to intensity of occupation. Deaver and Deaver (1986:74) illustrate that site density is also the direct result of survey sample and inventory intensity. As noted in most overviews which use second (or third) hand inventory, the author also found a broad spectrum of recording techniques and methodologies for past inventory in the analysis area. Part III provides a discussion and listing of the diversity and the kind of inventories conducted. Site density contains a potential bias, based on survey coverage, distribution, etc. With this in mind, I've gone ahead and made a few statements about the prehistoric site density of the Whitetail Pipestone area:

Approximately 10 percent inventory of the 231,000 acres of National Forest lands produced 37 prehistoric sites. Site density, at this time calculates to about .00016 prehistoric site(s) per acre, or one site to every 6243 acres. Theoretically, we can use this to figure an estimated site density over the entire area. To extrapolate this density as a representative of the whole, we could expect one prehistoric site for every 624 acres. A large flaw in this method is the fact that the vast majority of inventory has been conducted in "high-probability" areas, where cultural sites were either indicated from prior site-leads or expected, because of environmental correlations. I expect that if current site-density figures were used, and intensive inventory conducted, we would come up far short of the predicted sites. Instead, it would be much more accurate to look at numbers of known sites and associated site types, along with their environmental relationships, and make the prediction based on similar relationships.

Site size can be generalized from a review of the site records. To complete this analysis, a column for "site size" in square meters was added to the table for functional classification (See 5.3.1 above). In this manner a correlation between site type and site size was generalized. Prehistoric sites on National Forest lands in the Whitetail Pipestone analysis area averaged 3849 square meters in size. Subsistence sites (food procurement and processing) were generally the largest. They ranged from 150 to 16,800 square meters in size, with an average of 5837.5 square meters. Industrial sites ranked a close

second. Lithic quarries and associated, production workshops ranged from 500 to 30,000 square meters individually, and averaged 5010.5 square meters. Surprisingly, this analysis found that habitation sites (domestic, maintenance, and camping areas) were third largest. These ranged from 80 to 30,000 square meters and averaged 4054.4 square meters. This group also showed the widest span in size. Sites with the smallest areal extent were the individual ritual and ceremonial sites. However when ritual attributes accompanied habitation and subsistence sites, the site size increased dramatically. This illustrates the bias introduced when sites are classified into more than one type or category. Individual ritual or ceremonial sites ranged from 100 to 324 square meters, averaging 312 square meters. When combined with other functions, the site size grew to an average of 5364 square meters, which rivals the largest of sites. I hypothesize that many large, multi-component or multi-feature sites may also contain ritual attributes, thus accounting for the wide variation in categorical site size.

5.6.2 Site Location within the Environment

By using the information in Table 10, Section 5.3.1, site records and GIS topographic depiction of sites, we can make a few cursory observations on the location of certain types of sites: All but one of the habitation sites are located near a perennial water source. Water sources are primarily streams; springs are also frequented. Landforms associated with these occupations are creek terraces, alluvial fans, stream confluences and the up-hill side of springs. Ritual sites are predominately rock art, and all rock art sites are in the form of pictographs. Environmental attributes found closely associated with these rock art sites are the outcrops of large granite boulders. Also noted is the proximity (which may be interpreted as "probable association") of ritual sites with many habitation/occupation and subsistence sites. Subsistence sites are virtually all associated with habitation sites, therefore linked to the same environmental attributes. This correlation is probably representative of an area which was frequented for subsistence reasons. One single habitation site is not located near perennial water; it *is,* however, located at a natural game catchment, thus illustrating the former observation. Industrial sites are located in two environments. Lithic quarries are primarily found in the upland, where desirable (quartz) outcrops are common. Workshops, where the lithic material was taken for production, are located not far from the quarries, and usually co-occur with habitation sites near water.

5.6.3 Other Spatial Relationships

Other relationships can certainly be explored from the existing information on the analysis area. For instance, a listing of site-size-by-land-form or by temporal

representation, site-type-by-elevation, distance between certain types of sites, number of site features relative to site size or function; the list goes on. As new data enters the record, statistics will undoubtedly change.

5.7 Site Formation (and Deflation) Processes

Archaeologists generally agree on the need to take into account the site formation processes when making inferences about the resource. Specialized sub-disciplines of archaeology have begun to supply new principles (Shiffer 1987:8). Experimental archaeology, ethnoarchaeology, geoarchaeology and vertebrate taphonomy have provided new insight on site interpretation and formation processes. The agents at work in site formation and deflation are generally classified into two categories, processes of the natural environment and those of the cultural environment.

5.7.1 Natural Processes

Natural site formation and reduction agents present in the area are discussed in the physical description of the study area as outlined in Part II. Those which might alter the stratigraphy of a site include the characteristic coarse, skeletal soils which erode easily and are compounded by poor vegetative cover, frost movement and a punctuated moisture regime. Other less visible agents include bioturbation from plants and animals, general weathering, exposure to the sun and decay of organic materials through bacteria, fungus, and insects. Rates and cycles of deterioration vary depending on many factors. Shiffer (1987) provides a comprehensive look at both the natural and cultural processes at work. One of the key reasons that archaeologists in this area rely so heavily on lithic debris for initial site interpretation is that lithic materials do not disintegrate as to do most organic remains.

5.7.2 Cultural Processes

Cultural site formation and reduction agents present in the analysis area are discussed in the culture history outlined in Part IV. Factors which contribute to the cultural process are often confusing and intricate. They can be both site-specific and area-wide; they can be related to deposition or disturbance. Those which should be considered when reviewing depositional attributes include repeated use of the site or recycling of artifacts, conservation or curatorial factors, aboriginal landscape use (such burning) and settlement longevity. Those which we have identified as post-depositional disturbance can be classified in terms of historic and contemporary (or ongoing) activities and direct or indirect. These might include collecting or looting, earth-moving activities and surficial disturbances (such as trampling or plowing). Historic disturbance processes which have been observed in the analysis area include mining, logging, road and railroad building,

dams and associated inundation, other construction and maintenance, and stock grazing (also see discussion 4.2.10 and 4.2.11). Contemporary or ongoing activities could include stock grazing, motorized use, recreational camping, timber harvest, and prescribed burns.

5.7.3 Site Disturbance: Observations

Site monitoring and recordation during the summer of 1998 produced a number of observations as to what natural and cultural processes have and are affecting prehistoric sites. Notations in Table 12 list those observations for each individual site. We found that both natural and cultural processes, often working in tandem, were impacting sites. In the past, prior to 200 years ago, the natural processes probably dominated the impacts. During the historic era, many types of cultural activities disturbed prehistoric sites. The impacts continue to occur today, primarily as a result of cultural processes, but which are exacerbated by natural erosion.

The major classes of natural site formation and/or deflation processes observed at work were: downslope sheet erosion, flood scouring and overburden deposition, gully erosion, sun fading, leaching and mineral overwashing as a result of moisture (on rock art), bio-deterioration of ecofacts in sites, and wildlife trails or trampling.

The major classes of cultural site formation and/or deflation processes observed in operation were broken down into "historic" and "contemporary" categories. During the historic period, cultural alteration of prehistoric sites resulted from ground disturbance associated with placer and lode mining activities, grazing (and perhaps overgrazing), wood cutting, habitation activities, road building, railroad construction and associated use and inundation of watersheds for reservoirs. Nearly every historic context which can be found in the area has left its mark on the prehistoric sites.

The nature of contemporary cultural processes is somewhat different than that of the Historic Period. Today, impacts occurring at prehistoric sites are primarily the result of recreational activities. This is partly due to the nature of our society, where more recreation in general is occurring. Contemporary cultural processes observed include: stock grazing, road maintenance, motorized road and trail traffic (large vehicle, OHV and motorcycle), dispersed camping, crystal hunting, riparian (exclosure) fencing, target practice, and artifact collecting.

NHPA Section 106 review, where agencies consciously make an effort to identify and preserve sites during the course of federal undertakings has obviously corrected some of the cultural processes which previously impacted sites.

Table 12.

MONITORING RESULTS - EXISTING CONDITION (WITH OBSERVATIONS REGARDING IMPACTS IN BOLD)
PREHISTORIC SITES ON NATIONAL FOREST - WHITETAIL PIPESTONE MANAGEMENT AREA

***CONFIDENTIAL: SITE LOCATIONS - THIS INFORMATION SHOULD NOT BE RELEASED TO THE PUBLIC AND IS NOT SUBJECT TO PROVISIONS OF THE FREEDOM OF INFORMATION ACT.**

SITE NO.	LEGAL * LOCATION	SITE TYPE OR NAME	EXISTING CONDITION	OWNER-SHIP
24JF100	Confidential - Not for Public Disclosure	Spire Rock - Hartman Creek	Part of a multiple site district along along both sides of Hartman Creek in the vicinity of Rd 222 and Spire Rock; most is newly recorded; the old form is vague and contains no map. The site is presumed eligible for the NR under Criterion D; **Currently being impacted by Road use and maintenance; road #8639 is cut through the site. Another old (closed) road junctions with #8639 at the site. A riparian exclosure fence bisects the site. Sheet erosion and gullying is occuring.**	FS
24JF253		Lower Whitetail aka. Whitetail Cros-sing	Prehistoric - stratified habitation site which has yielded 150 projectile points, hide working tools, knives, bone tool(s), Intrmountain cermanic, drills, faunal remains, waste flakes from three periods; cultural affiliation: Old Womens', Avonlea, P.Lake, Hanna, McKean, Agate Basin as recorded in 1978. We (re)recorded during PIT 98, mapping the surface finds which included hearths. Later **found to have been excavated** in the 1970's by Whitehall Resident and others. Data salvage is ongoing. A cursory review of collected materials indicate **natural deterioration of larger ecofacts (bones and soft materials). The site is eroding out of the road (#173). It shows evidence of historic occupational use. It is currently being impacted by road use, cattle congregation and dispersed camping.**	FS
24JF603		Lower Whitetail #1	Prehistoric site; **has been surface collected of artifacts** which indicate food or hide processing activities and projectile points in the vicintiy of a perennial spring; old site form/no map; pvt ownership - NF inholding - Unknown status; no monitoring. **Historic improvements at homestead/ranch site may have altered prehistoric site.**	Pvt (Caldwell In-holding

SITE NO.	LEGAL * LOCATION	SITE TYPE OR NAME	EXISTING CONDITION	OWNER-SHIP
24JF604 (24JF1020)		Caldwell Pictographs	Prehistoric Rock Art; numerous motifs including circles & fingerlines; recommended eligible; on boundary of FS & pvt ownership; **Immediately adjacent to and clearly visible from Road #173, was recently smoked stained by campfire built at base.**	FS/Pvt Boundary site
24JF605 (24JF1020)		Pictograph - Whitetail Bear	Prehistoric Rock Art; Grizzley Bear with child-sized handprints and mountain sheep motifs; consider eligible under Criterion C and possibly A; no noticable impacts.	FS
24JF843		Prehistoric open air occupation	Prehistoric; scattered distribution of hearths and artifacts, as well as nearby basalt source; considered eligible under Criterion D; **Road from Ringing Rocks to Dry Creek crosses the site.** Historic component Stone building and corral added during monitoring.	FS;
24JF961		Halfway Mine & prehistoric site - pictograph	Multicomponent - Mining Related and Prehistoric; Halfway Mine is recommended eligible for the NR under Criterion A & D; The prehistoric component is also considered eligible; FS; **Road #8690 (ATV trail) crosses the edge of the site. Historic mining has severely altered the potential site area.**	FS
24JF964		Silver Queen Mine & lithic scatter	Mining Related & Prehistoric Site; Historic component presumed eligible under Criterion D; May contribute to Pipestone Historic District; Prehistoric site is determined to be not eligible for the NRHP (FS/SHPO CD 1996); **Prehistoric component severely disturbed by historic (Depression era) mining.**	FS
24JF995		Coyote PH Rockshelter	Prehistoric site; late prehistoric site below natural-overhang rock; unevaluated, more work recommended; intact	FS
24JF1319		Double Boulder Pictographs	Prehistoric Rock Art; on granite boulders; recommended eligible by recorders (1996); FS; located just off Road #173 at lower Whitetail Park. **Has been used for target practice.**	FS
24JF1320		Xmas Tree Pictographs	Prehistoric Rock Art; on granite outcrop; recommended eligible by Recorders (1996); **Natural weathering is fading the rock art**	FS
24JF1321		Pinacle Rock Pictographs	Prehistoric Rock Art; on granite spire; recommended eligible for NRHP by recorders (1996); **Natural weathering is fading the rock art**	FS
24JF1322		West Bank Pictographs	Prehistoric Rock Art; on granite boulders; complex of paintings in good condition; recommended NRHP eligible by recorders (1996);	FS

SITE NO.	LEGAL * LOCATION	SITE TYPE OR NAME	EXISTING CONDITION	OWNER-SHIP
24JF1324		Fallen Slab Pictogr-aphs	Prehistoric Rock Art; on granite slabs just west of Whitetail road; re-commended eligible by recorders (1996); Close proximity to Whitetail Road, no noticable impacts.	FS
24JF1331		Lithic Scatter - Tebay Spring	Prehistoric Site; located around spring; recommended eligible under Criterion D; **Edge of site is being impacted by Road #8613 and two-track. Modern stockwater development and exclosure located at spr-ing.**	FS
24JF1539		Watson Gulch Prehis-toric	Prehistoric site; temporary camp around small upland spring/seep; lithic scatter with no diagnostics or features apparent; Considered eligible for the NRHP under Criterion D until testing further defines the site; intact except for **minor disturbance by wildlife and perhaps stock watering use**.	FS
24JF1543		Prehistoric Camp - Elder Creek	Prehistoric habitation/campsite; Hearth features visible, lithics, no diagnos-tics; Considered eligible for the NRHP under Criterion D until testing or salvage can be done; **Being impacted by Road #86 and the Elder Creek Picnic Area . Road use and maintenance is causing impacts.**	FS
24JF1544		Lithic Scatter/crystal chipping station	Prehistoric; recommended eligible D; **Being impacted by ATV trail use on old (non-system) road along Halfway Creek.**	FS
24JF1545		Lithic Scatter - Sui-cide Water Dev.	Prehistoric; Unevaluated for NRHP; **Located in a non-system trail near Suicide Cabin - along Halfway Creek. Past logging and prospecting activities *may* have impacted the site.**	FS
24JF1546		Prehistoric Campsite - multiple loci	Prehistoric; Newly recorded, enevaluated for NR; **Impacts have occurred from road construction (#222) and blading a parking area off of Road #222; continuing impacts from ATV and motorcycle use on Road #8690 and the old (non-system) road along Halfway Creek. (High marking cutting into remaining site on the south of Rd #222.**	FS
24JF1547		Stone Oven, Log Bridge & PH site	Ethnic and transportation related multicomponent site; The two historic features may not be contemporaneous; recommended Criterion D eligible/ newly recorded; Includes a prehistoric component. **Minor damage is oc-curing from ATV/motorcycle use as a turnaround area.**	FS
24JF1549		Lithic Scatter - Half-way crossing	Prehistoric; Unevaluated for NR; FS. **Being impacted by motorized trail use on Road # 8690; some floodscouring may have occured in the past.**	FS

SITE NO.	LEGAL * LOCATION	SITE TYPE OR NAME	EXISTING CONDITION	OWNER-SHIP
24JF1579		Trestle prehistoric camp and historic camp	Nice prehistoric site on small bench. Well vegetated except **old road** which **cuts deeply through the north west side of site, which is being used as an ATV trail. Edge of the bench/terrace is eroding. Past use by placer miners and possibly railroad activities may also have impacted the site.** A historic component may be related to placer mining or the railroad. Nearby pictograph 24JF1580	FS
24JF1580		Trestle pictograph	Small pictograph in rock shelter about 1/8 mile up the draw from the trestle PH campsite (24JF1579). May have historic component also. Near an old road which is being used as an ATV trail. No impacts noted except **fading of the pictograph from moisture and weathering.**	FS
24JF1581		Monolith Pictograph	Within complex of pictographs at the gaging station. This one hadn't been recorded before. It is near the road, but not receiving direct impacts. **Rock art is fading due to natural weathering (sun, rain and granite spalling).**	FS
24JF1582		Grouse Cr. Whitetail Cr. Confluence/ Upper Buffalo skull site	Small campsite on large alluvial plain. There may be additional subsurface. Bison skull found nearby. Good preservation. **Heavy soil overburden from alluvial movement is apparent.**	FS
24JF1583		Prehistoric at Whitetail Gillespie Confluence/ Lower Buffalo skull site	Prehistoric campsite along low creek terrace, groundstone, artifacts. Good preservation. **One shallow stock trail through site. Past flooding is highly likely.**	FS
24JF1584		Crystal Pits Prehistoric Quarry	Crystal quarry with a few discarded artifacts, near the main road #222 southeast of Spire rock. **The site is being impacted by digging activities of modern crystal hunters.**	FS
24JF1585		First Hartman Creek Prehistoric Campsite	Part of a multiple site district along along both sides of Hartman Creek in the vicinity of Rd 222 and Spire Rock; The site is presumed eligible for the NR under Criterion D; **Currently being impacted by Road #8637 use and maintenance and past timber cutting, camping and slash burning activities.**	FS
24JF1586		Second Hartman Creek Prehistoric Campsite	Part of a multiple site district along along both sides of Hartman Creek in the vicinity of Rd 222 and Spire Rock; This site is on the north side of the creek. Itis presumed eligible for the NR under Criterion D; **Past impacts from erosion and cattle congregation. The site is currently bisected by a riparian exclosure fence.**	FS

SITE NO.	LEGAL * LOCATION	SITE TYPE OR NAME	EXISTING CONDITION	OWNER-SHIP
24JF1587		Lindsey's Site	Prehistoric site eroding from a deep road cut on the east side of Spire Rock. Campsite/lithic scatter, hearth feature, tools and artifacts. **Site has been seriously impacted from road construction, maintenance and traffic, both historic and contemporary - Road #8639. Also noted were currently occuring impacts from wildlife (moose or elk) which were breaking down the cutbanks from the upslope side (probably enroute to watering). Fenceline crosses the site. Gullying in roadway is occuring.**	FS
24JF1588		Crystal Spring Quarry	Crystal lithic procurement quarry with primary and secondary flakes, deflated cores and debitage; east of Lindsey's site near drainage feeder spring. **The site is being impacted by contemporary crystal digging.**	FS
24JF1589		Hartman Cr. prehistoric above old FS Adm. Site	Lithic scatter, possible campsite located along the west side of Hartman creek on narrow terrace. The **prehistoric component is eroding from road #8639 along the drainage. Impacts from road use and maintenance may be occuring. Part of the site may have been obliterated historically with the construction of the "spike camp" at the administrative site.**	FS
24JF1590		Grouse Cr. Prehistoric, near cave - Bearing tree	Small campsite, patterned artifacts, **unstable soils with some wildlife (or stock) use noted**, but otherwise good presrvation.	FS
24JF1593		Ali's PH site	Lithic scatter on sloping terrace, indicates Early Archaic Period use; **unstable soils, downslope sheet erosion, exacerbated by stockwatering use nearby and by Road # 8637 which bisects the site.**	FS
24JF1639		Beefstraight Prehistoric - above Walsh Quarry	Lithic scatter; field verified, **is eroding from the old road, now used as an ATV trail through the Walsh Quarry (#8618)**	Pvt in-holding
24JF1640		Homestake Prehistoric near Railroad.	Lithic scatter across alluvial fan; no diagnostic artifacts noted. Recommended not eligible. **Site is located in a severely disturbed area of a historic granite quarry and the railroad. It is bisected by an OHV trail and is currently being impacted by trail use.**	FS

PART VI: SYNTHESIS AND SUMMARY

6.1 Project Objectives

Throughout the compilation of this overview, there have been two objectives in mind. First, to summarize available information on the analysis area prehistory; and second, to estimate the "existing condition" of the resource. This "characterization" of the resource logically leads to a third objective. No less important, but probably more subjective is the avenue to make recommendations for future management of the resource. This overview provides a framework which highlights the expected areas of archaeological sensitivity and summarizes a baseline set of comparative archaeological evidence. From this, cultural resource managers have a basis upon which to design future surveys, compare resources, evaluate significance and set priorities in a more informed and systematic manner.

6.2 Whitetail Pipestone Cultural History, Site Density and Relative Significance

The prehistory of the analysis area appears diverse and still largely speculative. The mosaic nature of prior inventories and of recorded sites is by no means representative of the whole. Still, by pulling together regional overviews, intra-area surveys and data from 37 recorded prehistoric sites, we are able to document the following characterization of culture history:

Early Paleoindian Period. No sites of the earliest period of human habitation, at about 12,000 years ago, have been documented on Forest Service lands within the Whitetail Pipestone. Surface finds of Clovis and Folsom projectile points have been reported on nearby BLM lands. Stratified Folsom sites have been found in the mountain ranges to the immediate north and south of the analysis area, making it possible that Folsom, and to a lesser extent Clovis peoples, could have existed in the project area. Given the scarcity of these sites in general, we do not expect them in large numbers. Any Early Paleoindian Period sites discovered here will be significant for at least two reasons: (1) these sites are exceedingly rare, and any information that they can offer will add to this little known period in regional prehistory, and; (2) because, if stratified, these sites may add invaluable information toward understanding the differences (or similarities) of plains and Foothill-Mountain Paleoindian peoples.

Middle and Late Paleoindian Period. Site data for the Whitetail Pipestone indicate a good possibility for the location of sites from the Foothill-Mountain Paleoindian complexes of 8000 to 9000 years ago. 24JF253 and 24JF1590 contain artifacts which exhibit characteristics consistent with the middle and late part of the Paleo Period. Sites from this era are more common than the early part of the Paleo Period. Most researchers see this as a result of increased population density and group movements. The changing climate and environment may also be a factor within the analysis area. Mountainous regions may have been more "habitable" after the Pleistocene Ice Age. It was during that time that the climatic pendulum swung toward the warmer and drier Altithermal of the Archaic Period. Sites representing the Middle and Late Paleoindian Period may be significant, if intact, to help understand the movements or environmental preferences and demographics of early peoples.

Early Archaic Period. One site in the analysis area displays characteristics consistent with the Early Archaic Period of 4000 to 8000 years ago. 24JF253 contains an Oxbow component and also evidence of possible use by Bitterroot peoples. Other isolated projectile points, stylistically related to the Period, have been found in the Whitetail Pipestone. These surface finds lend weight to the philosophy that the Early Archaic saw a more dispersed and diverse use of the land and resources as a result of the harsher conditions of the Altithermal. It is quite possible that other Early Archaic Period sites exist in the analysis area. Stratified Oxbow sites, if found, could yield significant information to the understanding of this Period.

Middle Archaic Period. The McKean peoples of 3000 to 4000 years ago saw the climate change to that we know as "modern." The large and different fauna of the last ice age were extinct. Researchers find a heavier use of plants during this time, as represented by ground stone implements and roasting pits. Sites 24JF253, 24JF1546, 24JF1586 and 24JF1589 all contain Middle Archaic components. All three varieties or styles of projectile points (McKean, Duncan and Hanna) are represented. Obsidian hydration dates from two McKean complex points at 24JF253 yielded figures of 4670 B.P. and 5896 B.P. These data lead to a hypothesis that McKean-style artifacts in the Whitetail Pipestone vicinity may actually belong to an earlier Archaic Period people. Stratified sites of this period would be especially significant if cross-datable materials are present.

Late Archaic Period. The Yonkee, Pelican Lake, and Besant peoples of 3000 - 1000 years ago left evidence at twelve sites in the analysis area. 24JF961, 24JF1583, 24JF1587, 24JF1589 and 24JF1593 all contain projectile points reminiscent of the

Yonkee style. To date, this point-style is not well documented in the mountainous areas west of the Great Plains. Information from these sites could result in a better understanding of the distribution of Yonkee peoples. The Pelican Lake complex, believed to be later than Yonkee, is evidenced at six sites in the Whitetail Pipestone. 24JF253 yielded at least six representative Pelican Lake projectile points. Other sites include 24JF100, 24JF603, 24JF1579, 24JF1587 and 24JF1590. With this quantity of associated sites, questions on Pelican Lake stylistic variations and cultural adaptation may be answered from sites in the Whitetail Pipestone. An obsidian Pelican Lake style point from 24JF253 was hydration dated to 2972 B.P. This is consistent with other researchers' estimates for the phase. Besant-style artifacts co-exist with Pelican Lake varieties at 24JF253, 24JF1579, and 24JF1590. 24JF1586 and 24JF995 may also contain Besant occupations. The Late Archaic Period was one of technological transition and population increase for native peoples. By the end of the Archaic, use of the atlatl as a hunting tool was waning, and bow and arrow use had increased dramatically. The number of sites in the analysis area peaks with the Late Archaic Period, gradually decreasing in the Late Prehistoric Period. Sites which yield a good, datable stratigraphy of the Archaic would be especially significant for determining the hypothesized co-existence of Pelican Lake and Besant peoples.

Late Prehistoric Period. Five sites in the Whitetail Pipestone yielded projectile points from the Avonlea and Old Woman's phases of the Late Prehistoric Period. 24JF253, 24JF1546, 24JF1584, 24JF1585, and 24JF1586 contain Old Woman's phase evidence. Avonlea may also be present at 24JF253. This period, from 300 to 1500 years ago, saw native use concentrated on bow and arrow technology, bison hunting and a generally changing life-style. Pottery, a late manifestation on the Plains is found at 24JF253 in the form of (Shoshonean) Intermountain ware. Most sites in the Whitetail Pipestone analysis area do not have especially good stratigraphy in the upper levels. A Late Period site with good integrity in this area would add to our understanding of the local use.

Protohistoric Period. No sites dating to the Protohistoric Period of European influence have yet been found in the Whitetail Pipestone. These sites are extremely rare, in part because of the short associated timeframe (200-300 years ago). In the absence of trade-goods or metal, these sites are extremely hard to differentiate from Late Prehistoric Period sites. If found in the analysis area, Protohistoric sites may be significant because, like the Paleoindian, examples are rare.

Regional Phenomena. Aside from the Intermountain pottery found at 24JF253, the single regional phenomena evidenced to date in the analysis area is the rock art. Twelve pictograph sites (24JF604-605, 24JF961, 24JF1319-1325, 24JF1580-1581) on granite boulder backdrops are recorded in the area. Most panels are painted with red pigment (ochre); 24JF605 also contains black. No dating of these sites has yet been attempted. As a whole, the rock art is not well preserved. Weathering agents and the nature of the granite which was used as a backdrop add to the degradation of these sites. 24JF605 is the best surviving example. Rock art with good preservation would be significant for study of motifs, materials, and method of application. The presence of datable material would also make an argument for significance at these sites.

Site types, site clusters and environmental relationships. The majority of prehistoric cultural sites are small occupations, probably representing transient camps which were set up in conjunction with another activity. About one fourth of the camps are related to lithic procurement or tool manufacturing; one eighth have evidence of associated food production or processing. Two cultural sites are lithic procurement quarries. Another is primarily a lithic reduction workshop. Four rock art sites were found in isolation; the remainder are within close proximity of campsites.

Prehistoric cultural sites cluster primarily in the Spire Rock-Hartman Creek-Halfway Creek vicinity, probably due to the availability of onsite lithic material, perennial water and abundance of wild game. Another group of sites is found concentrated on upper Whitetail Creek. The sheltered campsite, perennial water, and proximity to desirable plant and animal resources were probably primary locational considerations on Whitetail Creek..

Other sites are less concentrated. Most are found on terraces, alluvial fans or benches near creeks and springs. The upland sites number significantly less; these are mostly related to lithic procurement, hunting or ritual use.

Tribes with ties to the area. Currently recognized Tribal groups that may have interests in the project area include Flathead, Shoshone, Blackfeet and possibly the Nez Perce. The Flathead retain Treaty Rights for land on the west of the unit. Direct historical sources have identified use by the others. Ethnographic evidence also indicates that the Kiowa, Crow and Assiniboine may also have been present here at some time during prehistory.

Historic sites. There are no early trapping, trading or exploration sites recorded in the Whitetail Pipestone analysis area. Indian removal is not represented, but white settlement is very apparent. Mineral Survey and Homestead Entry are both well

represented, with mining-related sites (both placer and lode) dominating the historic era. Logging systems, including camps, woodcutter cabins and associated features are recorded, but not in the numbers expected (given the proximity to railroads and industrial hub). The number of recreation-related sites are small. Transportation, industrial and infrastructure-type sites are small in numbers, but make up a greater percentage of site area; this is true because sites are linear in nature or because they require a larger system of features for operation. This class of properties include railroads, utility lines, granite quarries, road systems and related networks.

6.3 Existing Condition of the Resource

Prehistoric sites in the analysis area have suffered past impacts, primarily from historic and modern cultural activities. Ground disturbing effects have historically occurred from placer and lode mining activities, logging, road building, railroad construction and associated use, and reservoir construction and watershed inundation. The impacts from livestock grazing, living sites, wildfires and some other activities has been less impactive. Many historic sites overlay prehistoric sites, indicating that landform and environment is an influential factor is human use. Since the implementation of Historic Preservation Laws and accelerated protection since about 1970, cultural sites have faired better. Effects from federal undertakings or federally permitted uses are considered and mitigated on public lands. There are however, some contemporary uses which threaten archaeology sites. These uses are threats, because they are not, by nature, easily identified to a point-specific source, and they do not require a special permit to take place on public lands. It is the collateral or cumulative effects of these activities that may degrade the archaeological resource. This class of impacts includes motorized vehicular use, dispersed camping, and recreation activities such as informal prospecting and crystal digging. The abundance of roads and trails (many are historic and/or user-created), increased numbers of recreationists and versatility of motorized vehicles has compounded to expose more prehistoric sites to visibility, erosive or compactive factors, vandalism or collecting. In addition, some permitted use and ongoing activities from routine road maintenance and stock grazing could also impact prehistoric sites.

Prehistoric site condition is varied. Some sites, such as 24JF964, 24JF1639 and 24JF1640 are nearly obliterated and are believed to have lost most stratigraphic integrity. Many others have upper level disturbance, but may have buried deposits or islands of intact stratigraphy. A few, such as 24JF1582 and 24JF1583, appear to have very little disturbance and may contain prime archaeological information. A program of systematic site testing would better define the resource.

Historic sites are impacted less from ground disturbance and more from weathering, scavenging and vandalism. The activities which effect prehistoric sites are also responsible for some impacts to Historic Period sites, particularly those factors which contribute to increased accessibility.

Significant historic sites in the analysis area are more numerous than prehistoric sites. This is due to a number of factors, including accelerated recognition in advance of federal projects, greater visibility and site density, and increased special interest from local residents. Examples of National Register sites which are either on National Forest or adjacent lands within the analysis area include the Northern Pacific Railroad (24JF948), the Welch Granite Quarry, Boulder Hot Springs and Elk Park Ice Pond.

6.4 Management Recommendations

An understanding of the nature and distribution of the cultural sites and the impacts which threaten them, leads to better site conservation and stewardship, and to more informed land management decisions. As outlined the goals and objectives when the project was introduced, I can foresee a formal research design (Phase II of a *Heritage Preservation Plan*) for the management area. The particular research design must factor in the agency's decision on recreation and travel management, but should also be guided by National Register Bulletin 16B and standard procedures for site evaluation. A systematic site-testing program would lead to more accurate National Register recommendations. A schedule of evaluations should also be considered, along with a Multiple Property Documentation.

Commensurate with the decision on recreation and travel management, additional site inventory should be undertaken in the analysis area. Priorities would likely be uninventoried areas which have a high correlation with environmental factors of known sites and areas proximate to currently recorded site clusters. Roads and trails that were not surveyed for original construction (e.g. historic or user-created) should be inventoried on a priority basis. Mitigation measures for identified classes of impacts should be researched and alternatives identified. Other areas or agencies may have dealt with similar conditions and we might learn from their successes (or failures).

NHPA Section 106 review will consider locations where site-specific improvements are proposed; new data from 106 review can also be factored into the site probability equation. Known sites in areas of high use or other vulnerability, or which have experienced past (or suspected) impacts should be scheduled for regular monitoring.

At numerous places in the overview, I have made research suggestions, based on materials and attributes present in the management area. If affordable, this research will also add to the databank of information on the analysis area. In turn, the larger the databank, the easier it will be to formally define the significance and accompanying preservation needs of each site. Land managers have come a long way in the past few years toward giving the cultural resources of the Whitetail Pipestone the stewardship they deserve. In the future, these managers face additional decisions that involve the study area, travel management, Forest Plan revision and the Roadless Area Conservation issue (to name just a few). It is my hope that information provided in this overview will aid their decisions in such a way that cultural resources will see the long-term benefit.

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